

The background of the entire page is a photograph of a university building. In the upper half, a large, dark, ribbed dome is visible. In the lower half, a stone archway with the words "GEORGE WASHINGTON" carved into it is shown. The scene is framed by out-of-focus pink cherry blossoms in the foreground.

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# THE GEORGE WASHINGTON UNIVERSITY UNDERGRADUATE PROGRAMS BULLETIN

2010-2011

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Information in this bulletin is generally accurate as of fall 2009. The University reserves the right to change courses, programs, fees, and the academic calendar, or to make other changes deemed necessary or desirable, giving advance notice of change when possible.

Program information needed to fulfill a major appears under the name of the department or program concerned in Columbian College of Arts and Sciences. For the School of Business, the School of Engineering and Applied Science, the Elliott School of International Affairs, and the School of Public Health and Health Services, program information appears under the school's entry.

Depending on the degree program, students must fulfill program requirements stated in the bulletin in effect at the time they matriculate or declare their major. Any subsequent changes in programs that may appear in future bulletins do not affect the program a student has already entered.

The entries under Courses of Instruction represent departments and programs, rather than all categories of courses taught. For example, to find Chinese, Japanese, Korean, or Vietnamese courses, look under East Asian Languages and Literatures. There are many cross-references to help the reader.

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# THE ACADEMIC CALENDAR 2010–2011

| August 2010   |    |    |    |    |    |    | September 2010 |    |    |    |    |    |    | October 2010  |    |    |    |    |    |    | November 2010 |    |    |    |    |    |    |
|---------------|----|----|----|----|----|----|----------------|----|----|----|----|----|----|---------------|----|----|----|----|----|----|---------------|----|----|----|----|----|----|
| S             | M  | T  | W  | T  | F  | S  | S              | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  |
| 1             | 2  | 3  | 4  | 5  | 6  | 7  |                |    |    | 1  | 2  | 3  | 4  |               |    |    |    |    | 1  | 2  |               | 1  | 2  | 3  | 4  | 5  | 6  |
| 8             | 9  | 10 | 11 | 12 | 13 | 14 | 5              | 6  | 7  | 8  | 9  | 10 | 11 | 3             | 4  | 5  | 6  | 7  | 8  | 9  | 7             | 8  | 9  | 10 | 11 | 12 | 13 |
| 15            | 16 | 17 | 18 | 19 | 20 | 21 | 12             | 13 | 14 | 15 | 16 | 17 | 18 | 10            | 11 | 12 | 13 | 14 | 15 | 16 | 14            | 15 | 16 | 17 | 18 | 19 | 20 |
| 22            | 23 | 24 | 25 | 26 | 27 | 28 | 19             | 20 | 21 | 22 | 23 | 24 | 25 | 17            | 18 | 19 | 20 | 21 | 22 | 23 | 21            | 22 | 23 | 24 | 25 | 26 | 27 |
| 29            | 30 | 31 |    |    |    |    | 26             | 27 | 28 | 29 | 30 |    |    | 24            | 25 | 26 | 27 | 28 | 29 | 30 | 28            | 29 | 30 |    |    |    |    |
|               |    |    |    |    |    |    |                |    |    |    |    |    |    | 31            |    |    |    |    |    |    |               |    |    |    |    |    |    |
| December 2010 |    |    |    |    |    |    | January 2011   |    |    |    |    |    |    | February 2011 |    |    |    |    |    |    | March 2011    |    |    |    |    |    |    |
| S             | M  | T  | W  | T  | F  | S  | S              | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  |
|               |    |    | 1  | 2  | 3  | 4  |                |    |    |    |    |    | 1  |               |    | 1  | 2  | 3  | 4  | 5  |               |    | 1  | 2  | 3  | 4  | 5  |
| 5             | 6  | 7  | 8  | 9  | 10 | 11 | 2              | 3  | 4  | 5  | 6  | 7  | 8  | 6             | 7  | 8  | 9  | 10 | 11 | 12 | 6             | 7  | 8  | 9  | 10 | 11 | 12 |
| 12            | 13 | 14 | 15 | 16 | 17 | 18 | 09             | 10 | 11 | 12 | 13 | 14 | 15 | 13            | 14 | 15 | 16 | 17 | 18 | 19 | 13            | 14 | 15 | 16 | 17 | 18 | 19 |
| 19            | 20 | 21 | 22 | 23 | 24 | 25 | 16             | 17 | 18 | 19 | 20 | 21 | 22 | 20            | 21 | 22 | 23 | 24 | 25 | 26 | 20            | 21 | 22 | 23 | 24 | 25 | 26 |
| 26            | 27 | 28 | 29 | 30 | 31 |    | 23             | 24 | 25 | 26 | 27 | 28 | 29 | 27            | 28 | 27 | 28 | 29 | 30 | 31 |               |    |    |    |    |    |    |
|               |    |    |    |    |    |    | 30             | 31 |    |    |    |    |    |               |    |    |    |    |    |    |               |    |    |    |    |    |    |
| April 2011    |    |    |    |    |    |    | May 2011       |    |    |    |    |    |    | June 2011     |    |    |    |    |    |    | July 2011     |    |    |    |    |    |    |
| S             | M  | T  | W  | T  | F  | S  | S              | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  | S             | M  | T  | W  | T  | F  | S  |
|               |    |    |    |    | 1  | 2  | 1              | 2  | 3  | 4  | 5  | 6  | 7  |               |    |    | 1  | 2  | 3  | 4  |               |    |    |    |    | 1  | 2  |
| 3             | 4  | 5  | 6  | 7  | 8  | 9  | 8              | 9  | 10 | 11 | 12 | 13 | 14 | 5             | 6  | 7  | 8  | 9  | 10 | 11 | 3             | 4  | 5  | 6  | 7  | 8  | 9  |
| 10            | 11 | 12 | 13 | 14 | 15 | 16 | 15             | 16 | 17 | 18 | 19 | 20 | 21 | 12            | 13 | 14 | 15 | 16 | 17 | 18 | 10            | 11 | 12 | 13 | 14 | 15 | 16 |
| 17            | 18 | 19 | 20 | 21 | 22 | 23 | 22             | 23 | 24 | 25 | 26 | 27 | 28 | 19            | 20 | 21 | 22 | 23 | 24 | 25 | 17            | 18 | 19 | 20 | 21 | 22 | 23 |
| 24            | 25 | 26 | 27 | 28 | 29 | 30 | 29             | 30 | 31 |    |    |    |    | 26            | 27 | 28 | 29 | 30 |    |    | 24            | 25 | 26 | 27 | 28 | 29 | 30 |
|               |    |    |    |    |    |    |                |    |    |    |    |    |    |               |    |    |    |    |    |    | 31            |    |    |    |    |    |    |

## 2010 Fall Semester

*August 30* Classes begin

*September 4–6* Labor Day weekend (holiday)

*Aug. 30–Sept. 9* Late registration

*October 1* Applications due for winter graduation

*November 3* Registration for spring semester classes begins\*

*November 24–26* Thanksgiving holiday

*December 7* Makeup classes

*December 10* Last day of regular fall semester classes

*December 13* Reading day

## GW Undergraduate Bulletin 2010

*December 14–22* Examination period

### **2011 Spring Semester**

*January 10* Classes begin

*January 10–19* Late registration

*January 17* Martin Luther King, Jr., Day (holiday)

*February 1* Applications due for May graduation

*February 21* George Washington's birthday observed (holiday)

*March 14–19* Spring recess

*March 23* Registration for fall semester classes begins\*

*April 25* Last day of regular spring semester classes

*April 26* Makeup classes

*April 27* Designated Monday

*April 28–29* Reading days

*May 2–10* Examination period

*May 15* Commencement

\*Registration dates are tentative; consult the Schedule of Classes.

## The University

### PRESIDENTS OF THE UNIVERSITY

1821–1827 William Staughton

1828–1841 Stephen Chapin

1843–1854 Joel Smith Bacon

1855–1858 Joseph Getchell Binney

1859–1871 George Whitefield Samson



|           |  |
|-----------|--|
| 1871–1894 | James Clarke Welling                     |
| 1894–1895 | Samuel Harrison Greene, <i>Acting</i>    |
| 1895–1900 | Benaiah L. Whitman                       |
| 1900–1902 | Samuel Harrison Greene, <i>Acting</i>    |
| 1902–1910 | Charles Willis Needham                   |
| 1910–1918 | Charles Herbert Stockton                 |
| 1918–1921 | William Miller Collier                   |
| 1921–1923 | Howard L. Hodgkins, <i>ad interim</i>    |
| 1923–1927 | William Mather Lewis                     |
| 1927–1959 | Cloyd Heck Marvin                        |
| 1959–1961 | Oswald Symister Colclough, <i>Acting</i> |
| 1961–1964 | Thomas Henry Carroll                     |
| 1964–1965 | Oswald Symister Colclough, <i>Acting</i> |
| 1965–1988 | Lloyd Hartman Elliott                    |
| 1988–2007 | Stephen Joel Trachtenberg                |
| 2007–     | Steven Knapp                             |

## **ABOUT THE UNIVERSITY**

George Washington was determined to have a great national university in the nation’s capital.

His hope was that students from all parts of the country would gain a first-hand knowledge of the practice as well as the theory of republican government while being instructed in the arts and sciences. He bequeathed 50 shares of The Potomac Company “towards the endowment of a University to be established within the limits of the District of Columbia, under the auspices of the General Government, if that government should incline to extend a fostering hand towards

it.” Despite Washington’s intentions, The Potomac Company folded and Congress never extended a “fostering hand,” so the University did not take shape until a group of Baptist clergymen led by Reverend Luther Rice took up the cause. They raised funds for the purchase of a site and petitioned Congress for a charter. Congress insisted on giving the institution a nonsectarian charter stating “That persons of every religious denomination shall be capable of being elected Trustees; nor shall any person, either as President, Professor, Tutor, or pupil, be refused admittance into said College, or denied any of the privileges, immunities, or advantages thereof, for or on account of his sentiments in matters of religion.”

Columbian College, as it was originally named, took up residence on College Hill, a 46-acre tract between the present 14th and 15th Streets extending from Florida Avenue to Columbia Road. The name of the institution was changed in 1873 to Columbian University and in 1904 to The George Washington University.

By 1918, the University had moved to the Foggy Bottom neighborhood—between 19th and 24th Streets, south of Pennsylvania Avenue—in the heart of Washington, D.C. The more than 100 buildings are situated on 43 acres bordered by the White House, the John F. Kennedy Center for the Performing Arts, the State Department, and the World Bank, as well as numerous federal agencies, national galleries, and museums.

GW’s Virginia Campus, initiated for graduate studies, research projects, and professional development programs, is located along the high-tech corridor on Route 7, just to the west of Route 28, in Loudoun County. In 1998, GW established The George Washington University at Mount Vernon College; the Mount Vernon Campus is on Foxhall Road in Northwest Washington.

Currently, the University's enrollments total more than 25,000, of which 10,200 are undergraduates, about 14,000 are graduate and professional students, and some 800 are nondegree students. The students come from all 50 states and about 130 different countries.

### **Mission Statement**

The George Washington University, an independent academic institution chartered by the Congress of the United States in 1821, dedicates itself to furthering human well-being. The University values a dynamic, student-focused community stimulated by cultural and intellectual diversity and built upon a foundation of integrity, creativity, and openness to the exploration of new ideas.

The George Washington University, centered in the national and international crossroads of Washington, D.C., commits itself to excellence in the creation, dissemination, and application of knowledge.

To promote the process of lifelong learning from both global and integrative perspectives, the University provides a stimulating intellectual environment for its diverse students and faculty. By fostering excellence in teaching, the University offers outstanding learning experiences for full-time and part-time students in undergraduate, graduate, and professional programs in Washington, D.C., the nation, and abroad. As a center for intellectual inquiry and research, the University emphasizes the linkage between basic and applied scholarship, insisting that the practical be grounded in knowledge and theory. The University acts as a catalyst for creativity in the arts, the sciences, and the professions by encouraging interaction among its students, faculty, staff, alumni, and the communities it serves.

The George Washington University draws upon the rich array of resources from the National Capital Area to enhance its educational endeavors. In return, the University, through its students,

faculty, staff, and alumni, contributes talent and knowledge to improve the quality of life in metropolitan Washington, D.C.

### **The Schools**

The George Washington University includes nine academic units, as follows:

*Columbian College of Arts and Sciences* offers programs leading to the degrees of Bachelor of Arts, Bachelor of Science, Bachelor of Fine Arts, Master of Arts, Master of Fine Arts, Master of Forensic Sciences, Master of Public Administration, Master of Public Policy, Master of Science, Master of Philosophy, Doctor of Philosophy, and Doctor of Psychology.

*The School of Medicine and Health Sciences* offers programs leading to the degrees of Bachelor of Science in Health Sciences, Bachelor of Science in Nursing, Master of Science in Health Sciences, Master of Science in Nursing, Doctor of Nursing Practice, Doctor of Physical Therapy, and Doctor of Medicine.

*The Law School* offers programs leading to the degrees of Juris Doctor, Master of Laws, and Doctor of Juridical Science.

*The School of Engineering and Applied Science* offers undergraduate programs leading to the degrees of Bachelor of Science and Bachelor of Arts. Graduate programs lead to the degrees of Master of Science, Engineer, Applied Scientist, and Doctor of Philosophy.

*The Graduate School of Education and Human Development* offers programs leading to the degrees of Master of Arts in Education and Human Development, Master of Arts in Teaching, Master of Education, Education Specialist, and Doctor of Education.

*The School of Business* offers programs leading to the degrees of Bachelor of Accountancy, Bachelor of Business Administration, Master of Accountancy, Master of Business Administration, Master of Science in Finance, Master of Science in Information Systems

Technology, Master of Science in Project Management, Master of Tourism Administration, and Doctor of Philosophy.

*The Elliott School of International Affairs* offers programs leading to the degrees of Bachelor of Arts, Master of Arts, Master of International Policy and Practice, and Master of International Studies.

*The School of Public Health and Health Services* offers programs leading to the degrees of Bachelor of Science, Master of Science, Master of Public Health, Master of Health Services Administration, Specialist in Health Services Administration, and Doctor of Public Health.

*The College of Professional Studies* offers programs leading to the degrees of Associate in Professional Studies, Bachelor of Professional Studies, and Master of Professional Studies.

In addition to these degree programs, The University is authorized by its Board of Trustees to award the Associate in Arts and the Associate in General Studies under particular circumstances.

### **Accreditation**

The George Washington University is accredited by its regional accrediting agency, the Middle States Association of Colleges and Schools.

The University is on the approved list of the American Association of University Women and is a member of the College Board.

The Law School is a charter member of the Association of American Law Schools and is approved by the Section of Legal Education and Admissions to the Bar of the American Bar Association.

The School of Medicine and Health Sciences has had continuous approval by its accrediting body, which is currently the Liaison Committee on Medical Education, sponsored jointly by the American Medical Association and the Association of American Medical Colleges. The clinical

laboratory science program is accredited by the National Accrediting Agency for Clinical Laboratory Science. The Commission on Accreditation of Allied Health Education Programs has accredited the programs in sonography and physician assistant. The physical therapy program is accredited by the Commission on the Accreditation of Physical Therapist Education of the American Physical Therapy Association.

In the School of Public Health and Health Services, the public health programs have full accreditation from the Council on Education for Public Health. The program in health services administration is accredited by the Accrediting Commission on Education for Health Services Administration. The program in athletic training is accredited by the Commission on Accreditation of Athletic Training Education.

In the School of Engineering and Applied Science, the Bachelor of Science programs in civil, mechanical, electrical, and computer engineering are accredited by the Engineering Accreditation Commission of ABET, Inc. The Bachelor of Science computer science curriculum is accredited by the Computing Accreditation Commission of ABET, Inc.

The Graduate School of Education and Human Development is a charter member of the American Association of Colleges for Teacher Education and is accredited by the National Council for Accreditation of Teacher Education and the State Education Agency–Board of Education of the District of Columbia for its eligible master's, specialist, and doctoral degree programs; the master's programs in school counseling and clinical mental health counseling and the doctoral program in counseling are accredited by the Council for the Accreditation of Counseling and Related Educational Programs; the master's program in rehabilitation counseling is accredited by the Council on Rehabilitation Education.

The School of Business is a member of AACSB International—The Association to Advance Collegiate Schools of Business; the Association accredits its undergraduate and graduate business administration and accountancy programs. The programs in accountancy satisfy the educational requirements for the Certified Public Accountant and the Certified Management Accountant professional examinations.

The Elliott School of International Affairs is a member of the Association of Professional Schools of International Affairs.

In Columbian College of Arts and Sciences, the B.F.A. with a major in interior design is accredited by the Foundation for Interior Design Education Research. The Department of Chemistry is on the approved list of the American Chemical Society. The Department of Music is an accredited member of the National Association of Schools of Music. The Ph.D. program in clinical psychology in the Department of Psychology and the Psy.D. program in the Center for Professional Psychology are on the approved list of the American Psychological Association. The M.A. program in speech–language pathology is accredited by the Education and Training Board of the Boards of Examiners in Speech–Language Pathology and Audiology. The M.P.A. program is on the approved list of the National Association of Schools of Public Affairs and Administration.

### **The Board of Trustees of the University**

The University is privately endowed and is governed by a Board of Trustees of which the President of the University is an *ex officio* member. Trustees who are GW alumni are indicated by an asterisk; a dagger indicates a graduate of Mount Vernon College before it became part of GW.

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Susan Karamanian, Anne M. Richard, Phyllis Goldfarb, Lee Paddock, Paul Butler, John M.

Whealan, Alan Morrison, Lisa Schenck

**School of Engineering and Applied Science**—*Dean* David S. Dolling; *Associate Deans* Martha

Pardavi-Horvath, Can Edip Korman, Bhagirath Narahari

**Graduate School of Education and Human Development**—*Dean* Mary Hatwood Futrell;

*Associate Deans* Janet Craig Hedgesheimer, Robert Nicholas Ianacone, Joel Gomez (*Interim*)

**School of Business**—*Dean* Susan Phillips; *Senior Associate Dean* Pradeep A. Rau; *Associate*

*Deans* Mehmet Murat Tarimcilar, Lawrence G. Singleton, Krishna R. Kumar

**Elliott School of International Affairs**—*Dean* Michael E. Brown; *Associate Deans* Barbara

Diane Miller, Mike Masato Mochizuki, Douglas Shaw

**School of Public Health and Health Services**—*Interim Dean* Josef J. Reum; *Associate Deans*

Rebecca Tyrrell Parkin, Katherine Louise Hunting, Blaine Parrish

**College of Professional Studies**—*Dean* Kathleen M. Burke; *Senior Associate Dean* Ali

Eskandarian; *Associate Dean* Charles Cushman

**The Faculty Senate**

In addition to the elected members listed below, the president of the University is *ex officio*; the executive vice president for academic affairs, the University registrar, and the deans of the schools are administrative members; and a parliamentarian is selected by the Faculty Senate. In general, only primary appointments are listed below.

Lilien Filipovitch Robinson, *Professor of Art and Chair of the Executive Committee*

Theodore M. Barnhill, *Professor of Finance*

Lisa M. Benton-Short, *Associate Professor of Geography*

Brian L. Biles, *Professor of Health Policy*

Douglas Boyce, *Associate Professor of Music*

Michael Scott Castleberry, *Professor of Special Education*

Joseph John Cordes, *Professor of Economics and International Affairs*

Michael D. Corry, *Associate Professor of Educational Technology*

David P. Costanza, *Associate Professor of Psychology and Organizational Sciences*

Bruce James Dickson, *Professor of Political Science and International Affairs*

Miriam Galston, *Associate Professor of Law*

Jorge Garcia, *Professor of Counseling*

Charles Alexander Garris, *Professor of Engineering*

William Byron Griffith, *Elton Professor of Philosophy*

Robert Joseph Harrington, *Professor of Engineering and Applied Science*

Hermann Josef Helgert, *Professor of Engineering and Applied Science*

Peter Hotez, *Professor of Microbiology, Immunology, and Tropical Medicine*

Diana Entwisle Johnson, *Associate Professor of Biology*

Peter Flindell Klaren, *Professor of History and International Affairs*

Diana Leigh Lipscomb, *Professor of Biology*

Scott B. Pagel, *Professor of Law*

Donald O. Parsons, *Professor of Economics*

Margaret Plack, *Associate Professor of Health Care Sciences*

Scheherazade S. Rehman, *Professor of International Business*

Gary Leonard Simon, *Professor of Medicine*

Arthur Edward Wilmarth, Jr., *Professor of Law*

Richard Windsor, *Professor of Prevention and Community Health*

Philip William Wirtz, *Professor of Decision Sciences and of Psychology*

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## **ADMISSIONS**

GW actively seeks students who have a variety of interests, talents, goals, and experiences.

Applications from every state and some 100 countries are received every year, allowing the enrollment of a bright, talented, and diverse student body. With far more applications than available spaces, each completed application is carefully reviewed as the Admissions Committee strives to admit those students who have the academic preparation, interests, character, and motivation to thrive and succeed at GW and the greatest potential to contribute to the life of the University.

### **Freshmen—Regular Decision**

Preference for places in the entering class will be given to students who submit the application with required credentials by January 10. Students who wish to begin college in the spring semester should submit the application by October 1.

Applicants from secondary schools must arrange to have sent directly from their schools to the Office of Undergraduate Admissions a complete academic record together with a teacher recommendation and a counselor recommendation. This information should be supplied on the appropriate forms found on our website. Before enrolling, incoming freshmen must provide a complete high school record showing final grades and graduation.

*Entrance Examinations*—Applicants from secondary schools must submit scores on the College Board Scholastic Assessment Test (SAT) or on the American College Testing (ACT) battery. Submission of scores on College Board SAT subject tests is recommended. Score reports must be sent directly to the Office of Undergraduate Admissions from the testing agency.

### **Freshmen—Early Decision**

High school seniors applying for fall admission as full-time freshmen with The George Washington University as their first choice may wish to take advantage of one of our early decision options. GW has two binding deadlines from which to choose: deadlines are November 10 for Early Decision I and January 10 for Early Decision II. Students accepted as early decision applicants are required to send in the declaration of intent to attend GW, together with appropriate nonrefundable deposits, no later than January 15 for Early Decision I and March 1 for Early Decision II.

### **Students from Foreign Institutions**

Applications, required records, and scores on the Test of English as a Foreign Language or the International English Language Testing System (see below) and SAT should be received from international students no later than January 10 for regular decision for the fall semester and October 1 for the spring semester.



*Required Records*—At the time the application is sent, students must have the educational institutions previously attended send directly to the GW Office of Undergraduate Admissions copies of official certificates and records listing subjects studied, grades received, examinations taken, and degrees received. Certified copies of diplomas and certificates from all secondary schools, colleges, and universities attended are required. Records of state examinations and certificates are also required. These records become the property of the University and cannot be returned. These documents should be in the language in which the institution keeps its official records. If they are in a language other than English, the copies sent should be accompanied by a certified English translation.

*Language Tests*—All applicants whose first language is not English are required to take the Test of English as a Foreign Language (TOEFL) or the International English Language Testing System (IELTS). In considering candidates for admission, the University looks for a TOEFL score of 550 or above (paper-based) or 80 or above (Internet-based). The University looks for an IELTS score of 6.5 or above. The School of Business requires a minimum score of 600 (paper-based) or 100 or above (Internet-based) on a second taking of the TOEFL. Applicants are responsible for making arrangements to take the test at [www.TOEFL.org](http://www.TOEFL.org). The completed registration form must be returned well in advance of the semester for which admission is sought. TOEFL scores may not be more than two years old. On the application for the TOEFL, students should specify that the scores be sent to the GW Office of Undergraduate Admissions.

Admitted students whose first language is not English are also required to take an English for Academic Purposes course at GW; this requirement is waived for students with a TOEFL score of at least 600 (paper-based) or 100 (Internet-based).

*Financial Certificate*—A Financial Certificate and Bank Letter must be completed and submitted with the application for admission of all international students planning to study at the University under the authorization of either a student (F) or exchange visitor (J) visa. Satisfactory completion and submission of the Financial Certificate and Bank Letter are required for the issuance of a Form I-20 or DS-2019.

### **Transfer Students**

To be considered for fall admission, undergraduate students from other institutions should submit the application and required credentials by April 1. Corresponding dates are October 1 for spring and April 1 for summer.

A transfer applicant should be in good standing as to scholarship and conduct at all postsecondary institutions previously attended. An applicant who has attended one or more institutions of higher education must request each registrar to mail directly to the Office of Undergraduate Admissions a transcript of his or her record, even if credits were not earned or if advanced standing is not desired. In addition, applicants must have their high school record and College Board SAT or ACT test scores sent to the Office of Undergraduate Admissions directly from the high school and testing agency.

*Assignment of Credit for Transfer Students*—GW's residence requirement limits the amount of transfer credit that can be applied toward a degree. Students must complete at least 60 of the total number of credit hours required for their degree at or through the University; GW credits earned through GW study abroad, GW satellite campuses, GW distance education courses, and Consortium courses are treated as in residence. Students who are subsequently admitted through a GW school or college to earn a second bachelor's degree must complete at least 90 of the total credits required for the two degrees at or through the University.

Provided there is no duplication involved, either through course work or examination, credit may be granted for work successfully completed at other institutions of higher learning.

Assignment of transfer credit will depend on the grade earned, the appropriateness of the courses completed elsewhere, the standing of the institution at which the previous work was completed, and the regulations of the GW school in which the credit is to be applied toward a degree.

Transfer credit must satisfy the requirements for the degree sought as stated in this Bulletin. Credit may be accepted provisionally or may require validation by examination or completion of higher-level courses in the same sequence. Transfer credit will not be assigned for course work completed in vocational/technical programs (e.g., secretarial studies) or sub-freshman-level remedial work. Each GW school reserves the right to refuse credit for transfer in whole or in part. Although a grade of *D* in a course is not acceptable for transfer, the course may satisfy a curriculum requirement. School-specific regulations on transfer credit appear in this Bulletin under the school concerned.

### **Advanced Standing and Advanced Placement**

#### *SAT Subject Tests*

Advanced placement or waiver of a requirement will be granted on the basis of scores on the SAT subject tests according to the list that follows. Advanced standing (academic credit) is not assigned on the basis of SAT or ACT results. Note that Columbian College's General Curriculum Requirement of two courses in foreign languages and cultures is not waived on the basis of these tests.

| <b>Subject Test</b> | <b>Minimum Score</b> | <b>Exemption</b>           |
|---------------------|----------------------|----------------------------|
| American history    | 650                  | Waives Hist 71–72          |
| French, Spanish     | 690                  | Waives a two-year language |

German, Latin

630

proficiency requirement

*Credit by AP Tests and the International Baccalaureate*

Assuming there is no duplication, a maximum of 24 credit hours may be assigned upon admission to the University for any combination of the following except as noted below. An incoming student may also be granted advanced placement in a sequence of courses or waiver of a course requirement on the basis of additional college-level course work taken before matriculation, but this will not affect the number of hours needed for the degree.

*College Board Advanced Placement (AP) Tests*—On the basis of a score report sent to the Office of Admissions from the Educational Testing Service at the student's request, undergraduate credit may be awarded for Advanced Placement Tests. Refer to the GW Undergraduate Admissions website for the AP credit assignment chart. Students should arrange for the examinations through the secondary school attended or with the College Board, Advanced Placement Tests, at [www.collegeboard.com](http://www.collegeboard.com).

*International Baccalaureate*—GW awards 6 to 8 credit hours for Higher-level scores of 6 and above with the exception of English language. Students who have passed English A1 with a grade of 6 or 7 will receive 3 credit hours for Literature. No credit will be assigned for English A2 or English B or for subsidiary-level examination scores.

**Enrollment Deposit**

After notification of acceptance, an enrollment deposit will be required of all new undergraduate students. This deposit is due May 1 for freshmen entering in the summer or fall semester; it is usually due two weeks after admission for transfer students. The deposit is credited toward tuition and orientation and is not refundable. Full-time readmitted students are required to submit an enrollment deposit that is usually due two weeks after admission.

## **Readmission**

Previously registered students who wish to resume studies on campus after discontinuing enrollment for one or more semesters (summer sessions excluded) must apply for readmission. Deadlines for readmission applications from students in good academic standing are the same as those for transfer students. Students seeking readmission after having attended other institutions of higher education in the interim must have complete official transcripts sent to the Office of Undergraduate Admissions from all other institutions attended. Students seeking readmission as degree candidates after previous enrollment in nondegree status must submit a standard undergraduate degree application and fee, together with all entrance credentials not previously received or required.

Applicants for readmission are subject to the University regulations in effect at the time of readmission. The application fee is waived for students applying for readmission after previous enrollment as degree candidates at this University if they have not since registered at another institution.

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## **FEES AND FINANCIAL REGULATIONS**

The following fees and financial regulations were adopted for the academic year 2010–11.

Information on tuition and fees for the summer is available at [www.gwu.edu/summer](http://www.gwu.edu/summer).

### **Tuition Fees**

For undergraduates entering GW in academic year 2010–11, the University has adopted a fixed-rate tuition plan, with the following academic-year tuition fee guaranteed not to increase for up to five years of full-time\* undergraduate study: \$42,860 for students entering Columbian College

of Arts and Sciences, the School of Business, the School of Public Health and Health Services, the School of Engineering and Applied Science, and the Elliott School of International Affairs.

The fixed-rate tuition remains in effect as previously stated for undergraduates in the schools listed above: for those who entered GW in 2009–10, \$41,610; in 2008–09, \$40,392; in 2007–08, \$39,210; in 2006–07, \$37,790.

Half-time, part-time, and nondegree students are charged \$1,192 per credit hour.

Fees stated here exclude undergraduate health sciences programs; consult the Office of Health Sciences Programs in the School of Medicine and Health Sciences for applicable fees.

**Student Association Fee**—For students who first enrolled in Fall 2008 or later, \$1.50 per credit hour to a maximum of \$22.50 per semester. For students who first enrolled prior to Fall 2008, \$1 per credit hour to a maximum of \$15 per semester. The fee is nonrefundable.

**Voluntary Library Fee**—Each semester the Registration Schedule and Invoice includes a voluntary gift for the University libraries. Check the box labeled “Library Gift Decline” and omit the amount from your payment if you do not wish to include the library gift in your reimbursement to the University.

**Note:** The fee structures for campus housing and dining plans can be found at [living.gwu.edu](http://living.gwu.edu) and [gworldddining.com](http://gworldddining.com), respectively. Some courses carry additional fees, such as a laboratory or material fee, charged by semester as indicated in course descriptions; the amount appears in the Schedule of Classes. Students admitted to the B.A./M.D. program pay a fixed net tuition rate annually; the amount is announced in the letter of admission.

**Special Fees and Deposits (Nonrefundable)**

|  |      |
|--|------|
| Application fee  | \$65 |
| Advance deposit, required of each entering or readmitted full-time undergraduate | 800  |

|   |     |
|---|-----|
| Orientation fee, charged each entering full-time undergraduate  | 250 |
| Late registration beginning the first day of the semester   | 80  |
| Registration for continuous enrollment or leave of absence  | 35  |
| Graduation fee  | 100 |
| Late application for graduation (see Calendar)  | 35  |
| Late payment fee (see Past Due Accounts, below)   | 75  |
| Late authorization fee for third-party payment (see Third-Party Payment, below)   | 100 |
| Returned check fee, charged a student whose check is improperly<br>drafted, incomplete, or returned by the bank for any reason            | 35  |
| Special Columbian College departmental examination to qualify for<br>receiving credit (advanced standing), waiver of requirement, or both | 100 |
| Waiver examination to qualify for advanced placement  | 25  |
| Engineers' Council fee (charged all SEAS students), per semester  | 8   |
| Study abroad fee  | 400 |
| Transcript fee  | 5   |
| Replacement of lost or stolen picture identification card   | 25  |
| Replacement of diploma  | 50  |

### **Payment of Fees**

A student who registers for classes in any semester or session incurs a financial obligation to the University. Payment of tuition and fees is due upon receipt of the Schedule and Invoice or at the time of registration. Except for students on the monthly payment plan, tuition is to be paid in full by the first day of the semester or upon registration if registration is after the first day of the semester. The University reserves the right to revoke the registration, effective to the beginning

of the semester, of any student who fails to make full payment. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

**Monthly Payment Plan**—This payment plan is open to all students and is available for the fall and spring semesters only. Students must complete and submit an application by August 15 for the academic year or by January 5 for the spring semester to participate in the plan. Upon approval of the application, the student will be billed for each payment. The monthly payment plan for the academic year begins in June and ends in March, with the first five payments applied to the fall account and the second five applied to spring. For spring semester only, the plan begins in November and ends in March. Under the plan, all payments are due on the first of each month. The student will receive a monthly bill, but no interest or late fees will be charged provided payments are received as scheduled. Students who enroll in the plan after the first month must make up all payments to the month of enrollment. Interest and a late payment fee are assessed all accounts not paid in full by October 5 for fall and March 5 for spring. An outside vendor administers the plan and charges a one-time participation fee in addition to interest and late fees for any payments received late. For more information, see [colonialcentral.gwu.edu/billing/payment](http://colonialcentral.gwu.edu/billing/payment).

**Third-Party Payment**—The University accepts employer vouchers or purchase orders that are not contingent upon receipt of grades. Under all circumstances, the charges for tuition and fees remain the responsibility of the student. Authorization from a sponsor to be billed for a student's charges must be received in the Student Accounts Office by the end of the third week of the fall or spring semester. A late authorization fee may be incurred for responses received after these times. Bills are mailed to sponsors in October for the fall semester and in February for



the spring semester. Should a sponsor fail to remit payment to the University, the University will contact the student for payment. Students whose employers or sponsors reimburse them for tuition and fees after receipt of grades must pay in full upon receipt of the Schedule and Invoice or at the time of registration to avoid interest, late fees, and/or cancellation of registration. Students whose tuition is paid in full or part by employee benefits or teacher tuition remission must pay any remaining balance by the stated due date to avoid interest, late fees, and/or cancellation of registration.

**Past Due Accounts**—Accounts that are past due are encumbered by the University. A student whose account is encumbered may not register for future semesters and may not receive diplomas or transcripts. Late payment fees and interest may also be assessed each month that the account has an overdue outstanding balance. Please see the University's Tuition Payment Disclosure Statement at [colonialcentral.gwu.edu/billing/disclosures](http://colonialcentral.gwu.edu/billing/disclosures) for more information on those fees and billing practices. Accounts that are more than 90 days past due are referred to an agency and/or attorney for collection. The student is then responsible for all charges, costs, and fees due to, or incurred by, the University as well as all costs, fees, and charges incurred by the agency and/or attorney, including attorney's fees. Students whose registrations have been revoked or canceled for failure to make timely payments are not permitted to attend class and may not occupy University housing.

**Dishonored/Returned Checks**—A student whose check is returned unpaid by the bank for any reason will be charged a returned check fee and will be responsible for any associated costs and/or attorney's fees incurred by the University should a civil lawsuit or other collection effort be instituted to collect on such dishonored check. In any case where the University has reason to

believe that a student presented a dishonored check in bad faith, the University may, in addition to any collection efforts, refer the matter to the proper authorities for criminal prosecution.

### **Withdrawals and Refunds**

Applications for withdrawal from the University or from a course after the registration period must be made in accordance with procedures outlined under University Regulations in the sections Complete Withdrawal From the University, and Adding and Dropping Courses, respectively. Financial aid recipients must notify the Office of Student Financial Assistance in writing. No refund of the tuition deposit required of entering students is granted.

In authorized withdrawals and changes in schedule, cancellations of semester tuition charges and fees will be made in accordance with the following schedule for the fall and spring semesters:

1. *Complete withdrawal from all courses (on-campus students):*

|  |      |
|--|------|
| Withdrawal dated on or before the end of the first week of the semester  | 90%  |
| Withdrawal dated on or before the end of the second week of the semester | 60%  |
| Withdrawal dated on or before the end of the third week of the semester  | 40%  |
| Withdrawal dated on or before the end of the fourth week of the semester | 25%  |
| Withdrawal dated after the fourth week of the semester                   | None |

2. *Partial withdrawal:* If the change in program results in a lower tuition charge, the refund schedule above applies to the difference.

3. Regulations governing student withdrawals as they relate to residence hall and food service charges are contained in the specific lease arrangements.

4. *Summer Sessions*: In cases of authorized withdrawals from courses, refunds of 85% of tuition and fees will be made for courses dropped within the first seven calendar days of the start of a session. No refund will be made for courses dropped thereafter.

Courses that do not follow the traditional semester may have different refund policies.

The above information regarding cancellation of tuition charges and fees after withdrawal from the University may not apply to entering students who are recipients of federal aid; those students should check with the Student Accounts Office for the applicable cancellation schedule. Federal regulations require that financial aid recipients use refunds to repay financial aid received for that semester's attendance. This policy applies to institutional aid as well.

If a recipient of federal financial aid withdraws from the University or reduces his or her course load, federal regulations require that the University reevaluate the student's eligibility to determine the amount of aid the student is allowed to retain. If there is a credit balance on the student's account after the federal funds have been adjusted, institutional funds will be recovered from that amount.

In no case will tuition be reduced or refunded because of absence from classes. Authorization to withdraw and certification for work done will not be given a student who does not have a clear financial record.

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## **FINANCIAL AID**

The George Washington University offers a comprehensive program of financial assistance for students. Undergraduate aid consists of two basic types: awards for academic achievement or talent without reference to financial circumstances (merit scholarships) and scholarships, grants, loans, and employment based on both academic achievement and demonstrated financial need.

All undergraduate gift aid (institutional scholarships and grants and federal grants) requires that the recipient be working on the first undergraduate degree and be registered for a full-time course load on campus at GW. (Financial aid for study abroad is limited to approved programs.)

Loans and housing staff positions not based on financial need are available. In general, continuation of undergraduate aid does not extend beyond ten semesters, or the end of the senior year, or the semester in which the number of credits sufficient to graduate is reached, whichever comes first. (A non-GW study abroad semester counts as one of the ten semesters.)

Undergraduate aid does not extend beyond the earning of one undergraduate degree and does not cover semesters in which more than half of a student's courses are at the graduate level.

Gift aid (scholarships, grants, fellowships, assistantships, etc.) is taxable under Internal Revenue Service regulations to the extent that it exceeds the allowable costs of tuition, fees, and required books and supplies or is dedicated to other costs, such as room and board. Federal grants may be taxable if, together with other gift assistance, they exceed the allowable costs. In the case of a student who is awarded tuition scholarships, grants, or awards from more than one source, the combined amount cannot exceed tuition charges; institutional aid will be adjusted to this limit.

In general, consideration for financial aid is restricted to students in good academic standing who meet the minimum grade-point average for particular awards and are not financially encumbered by any other University office. Awards may be rescinded if satisfactory academic progress standards are not met. Applications for institutional or federal aid cannot be processed unless accompanied by complete signed copies of U.S. income tax returns. The University reserves the right to ask for documentation necessary to determine aid eligibility. Documents submitted as part of aid applications become the property of the University and cannot be

returned. Federal regulations require that the University report suspected cases of fraud or misrepresentation to the appropriate federal, state, and local authorities.

Information in this section is accurate at the time this Bulletin is prepared for press. The Board of Trustees reserves the right to change financial aid policies as it deems necessary. Additional information is contained in the Financial Aid Sourcebook and the Satisfactory Academic Progress statement available on-line. Future changes in federal regulations or institutional policies may alter the application requirements or program guidelines.

### **Merit Aid**

The University has merit aid programs of scholarships and awards for students with superior academic credentials or talents. These programs are based entirely on merit, without regard to financial need. Merit scholarships, including GW-sponsored National Merit Awards, cannot be combined.

*Presidential Academic Scholarships*—partial tuition scholarships for incoming freshmen. The scholarships are based on academic performance in high school and potential for future success. Awards may be renewed to current recipients who maintain satisfactory academic progress in a minimum of 12 credits per semester.

*B.A./M.D. Program*—The seven-year integrated B.A./M.D. program offers a fixed-tuition plan that allows families to plan and finance their student's undergraduate and medical education. Students admitted to this program pay a special annual tuition rate, which includes a merit discount, over the full period of the program. With this special tuition pricing, students are not eligible for any other GW merit scholarships. Awards may be renewed to current recipients who maintain satisfactory academic progress in a minimum of 15 credits per semester.

*Presidential Arts Scholarships*—awarded to outstanding student artists who have strong academic credentials and demonstrated abilities in the visual or performing arts and have applied, auditioned, and been selected for the Presidential Scholars in the Arts Program. Satisfactory academic progress in a minimum of 12 credits per semester and the recommendation of the relevant department are required for renewal.

*Elliott Engineering Honor Scholarships*—partial tuition awards are offered to outstanding incoming SEAS students with 30 or more transferable credit hours, including at least 3 credits of college-level chemistry or physics and 6 credits of college-level calculus or higher math. Awards may be renewed to current recipients who maintain satisfactory academic progress in a minimum of 12 credits per semester in an engineering curriculum.

*The J.B. and Maurice C. Shapiro Scholarship* to the University of Oxford is awarded each spring to a graduating senior or recent graduate through a competitive process upon the nominee's acceptance to Oxford. To be eligible, applicants must have applied for the Rhodes or British Marshall Scholarships. All of these competitions require high academic standing, evidence of leadership, and dedication to the larger society through community service. The Shapiro Scholarship provides up to two years of study at Oxford, equivalent to the Rhodes Scholarship. The J.B. and Maurice C. Shapiro Endowment funds two scholarships per year—one new and one renewal.

*The Bender Scholarship* to the University of Cambridge is funded by an endowment, the Bender Scholarship Fund. Every other year, the Bender Scholarship is open for competition. Graduating seniors, recent graduates, and third-year law students who participated in the Rhodes and/or British Marshall competitions are eligible for the Bender Scholarship. The endowed scholarship provides for up to two years of study at the University of Cambridge. The award

provides for an educational experience equivalent to that of a British Marshall Scholar attending Cambridge. The Bender Scholarship criteria are high academic achievement, evidence of leadership skills or potential, and community service.

*Pembroke/GW Program*—The George Washington University established a special relationship with Pembroke College in Oxford, whereby up to six GW juniors would be placed at the College for one year and enrolled as fully matriculated students of the University of Oxford. These placements are determined in an annual competition that takes place in the fall. The Committee evaluating candidates forwards to Pembroke College applications of the finalists. Pembroke then makes the final decision on placements. Many GW students have spent a year at Oxford in this program.

### **Need-Based Aid**

The University offers extensive programs of scholarships, grants, loans, and employment based upon demonstrated need. The University participates in the Federal Perkins Loan, Federal Pell Grant, Academic Competitiveness Grant, SMART Grant, Federal Supplemental Educational Opportunity Grant, Federal Family Education Loans, and the Federal Work–Study program. All applicants are required to file both the PROFILE and the Free Application for Federal Student Aid (FAFSA), designating GW to receive their information, and to supply copies of signed federal income tax returns and W2 forms for the current tax year for student and parents (if dependent). For family members employed by an international organization, a letter is required from the employer certifying salary and all benefits. Continuing students also need to submit a GW Financial Aid Application by the April deadline.

Incoming freshmen must file applications and supporting credentials for financial aid by February 1 for the next academic year; transfer students, by April 1. Continuing students must

file the PROFILE and FAFSA forms by April 25, and submit the GW Financial Aid Application for Continuing Undergraduate Students and supporting tax documents to the Office of Student Financial Assistance no later than April 23. March 1 is the deadline for the summer sessions. Summer aid is limited to federal or alternative loans. A student must reapply each year for all need-based aid, including need-based scholarships; renewal is contingent upon funds being available when the student completes the application.

*The George Washington Guaranteed Grant and Board of Trustees Scholarship*—The GW Guaranteed Grant or Board of Trustees Scholarship is available only to new undergraduate students who are charged full-time tuition according to the University's fixed-tuition initiative and who receive a need-based financial aid package for their initial period of enrollment at the University. This need-based grant or academic scholarship will be part of a student's initial financial aid package and is guaranteed for up to 10 consecutive semesters of full-time undergraduate enrollment at GW. For renewal of the grant or scholarship, the student must be enrolled and be charged as a full-time student and must maintain satisfactory academic progress per the guidelines of the Office of Student Financial Assistance. The award will be confirmed upon receipt and review of signed copies of the parents' and student's most recent federal tax returns (with requested schedules) and W2 statements. Students showing additional need beyond the GW Guaranteed Grant/Board of Trustees Scholarship will be considered for assistance from all other resources administered by the Office of Student Financial Assistance. While this grant can be combined with other institutional need-based grant awards, a student may not receive the GW Guaranteed Grant/Board of Trustees Scholarship in combination with merit awards, GW employee benefits, or the GW Family Grant.



*University Scholarships*—Full and partial tuition scholarships begin in the fall semester and may be renewed through the senior year, provided the holder reapplies by the published deadlines, maintains a *B–* average or better, completes 12 credits per semester, and continues to demonstrate financial need. All applicants for need-based aid are considered for these awards.

Sherman Page Allen Memorial Scholarship Fund

Mary J. Anderson Scholarship

Byron Andrews Scholarship

D.F. and J.D. Antonelli Scholarship Fund

Athletic Scholarship Fund

Stanley M. Baer Scholarship in Electrical Engineering

Sigrid Weeks Benson Scholarship

Gail E. Boggs Engineering Scholarship

Bou Family Foundation Scholarship

Henry N. Brawner, Jr., Foundation Scholarship Fund

A.D. Britt Scholarship Fund

Frederick Albert and Alma Hand Britten Scholarships

Barbara Willmarth Callahan Scholarship Fund

Mary Ellen Caplin Scholarship

Elsie M. Carper Undergraduate Scholarship Fund

Emma K. Carr Scholarships

Henry Harding Carter Scholarship

Maria M. Carter Scholarship

Paul E. Casassa Memorial Foundation Scholarship

James Edward Miller Chapman Educational Foundation Scholarship

Columbian Women Scholarship Funds

Victoria Briggs Scholarship Fund

Elizabeth V. Brown Scholarship Fund

Grace Ross Chamberlin Scholarship Fund

College Women's Scholarship Fund

Columbian Women Members' Scholarship Fund

Arline Hughes Dufour Scholarship Fund

Dr. Watson W. Eldridge, Jr., and John F. Eldridge Scholarship Fund

Founders of Columbian Women Scholarship Fund

Ross Lees Hardy Foundation Scholarship Fund

Lillian Young Herron Scholarship Fund

Nellie Maynard Knapp Scholarship Fund

Marcia B. Kraft Scholarship Fund

Janet McWilliams Scholarship Fund

Marie-Louise Ralph Turner Scholarship Fund

Cora and John H. Davis Scholarship

Isaac Davis Scholarship

Bertha B. Day Scholarship in Civil Engineering

District of Columbia Daughters of the American Revolution Scholarship

Estella Constance Drane Scholarship

Henry Parsons Erwin Scholarship

Robert Farnham Scholarship

## GW Undergraduate Bulletin 2010

Esther Brigham Fisher Scholarship

Louis E. Giles Memorial Scholarships

Gary C. and Leslie Granoff Scholarship Fund

Gridiron Foundation of the Gridiron Club Scholarship

Gruss Scholarship Fund

Isadore and Bertha Gudelsky Family Scholarship

Theo Campbell Hartman Scholarship

Elma Lewis Harvey Scholarship

Hazelton Scholarship

Adele Melbourne Holmes Native American Scholarship

Albert A. and Esther C. Jones Scholarship Fund

Allen M. Jones Scholarship Fund

David B. and James L. Karrick, Jr., Scholarship Fund

Samuel and Elizabeth Kay Scholarships

Amos Kendall Scholarship

L. Poe Leggette Memorial Scholarship Established by WRGW

Thaddeus A. and Mary Jean Lindner Scholarship Fund

Calvin D. Linton Endowment Scholarship Fund

Mary and Daniel Loughran Scholarship

Martha's Marathon Residence Hall Scholarship

Marshall Memorial Scholarship Fund

Maud E. McPherson Scholarship

Mensh Family Scholarship

A. Morehouse Scholarship

E. K. Morris Education Fund Scholarships

Helen Marie and Thomas E. Orr Scholarships

Henry and Caroline Orth Scholarship Fund

Thornton Owen Scholarship

Phi Delta Gamma Scholarships

Fred B. and Alma D. Pletcher Scholarship Fund

Levin M. Powell Scholarships

Jack B. Sacks Foundation, Inc., Scholarship

Henry Whitefield Samson Scholarship Fund

Scottish Rite of Freemasonry Scholarship Fund

Cecelia M. Sehrt Scholarship Fund

Sejong Scholarship Fund

Dorothy M. and Maurice C. Shapiro Scholarships to the University of Oxford

Dorothy M. and Maurice C. Shapiro Traveling Fellowship

Lula M. Shepard Scholarships

Mildred Shott Scholarship Fund

Margaret Lucille Snoddy Scholarship

David Spencer Scholarship

George Steiner Scholarship in Music

Mary Lowell Stone Scholarship

Charles Clinton Swisher Scholarships

Stephen Joel Trachtenberg Scholars Program

University Award for Phi Beta Kappa

University Players Scholarship in Memory of L. Poe Leggette

William Walker Scholarship

The Washington Post/Eastern High School Incentive Scholarship Program

Wanda Webb Memorial Scholarship

Abigail Ann Brown and Henry Kirk White Scholarship Fund

John Withington Scholarship

William G. Woodford Scholarship

Ellen Woodhull Scholarship

Barbara Jackman Zuckert Scholarship Fund for Blind Part-Time Students

*Activity Awards*—Students may be considered for the following activity awards during the semesters they are actively involved. Additional information can be obtained from the directors of the programs: Cheerleading Award; George F. Henigan Award in Debate; Pep Band Award.

### **GW Family Tuition Grant**

Families with two or more dependent children simultaneously enrolled as full-time undergraduates in a first-time degree program at The George Washington University can apply for the GW Family Grant. This is a half-tuition grant awarded to the younger sibling for the full academic year or for the fall or spring semester only and requires that all students being considered are charged the full-time tuition rate for their program. The grant is contingent on the recipient's and his or her sibling(s)' maintaining a 2.0 grade-point average and reapplying by the deadline. The grant is not available in any semester in which the older sibling(s) is enrolled in a non-GW-affiliated study abroad program. Contact the Office of Student Financial Assistance or go to [gwired.gwu.edu/finaid](http://gwired.gwu.edu/finaid) for an application, which requires submission of a copy of the first

two pages of the parents' federal tax return as verification of the dependent status of the students. International students must provide certification that they are dependent siblings either from their parents' employer (if an embassy or international organization such as the World Bank or International Monetary Fund) or from GW's International Services Office. The deadline is July 1 preceding the academic year; applications received after the deadline are awarded on a funds-available basis. The Family Tuition Grant cannot be combined with any GW merit award or the GW Guaranteed Grant/Board of Trustees Scholarship.

### **Loan Funds**

The University participates in the Federal Stafford Loans and the Federal Parent Loan for Undergraduate Students. Students should be aware that they have a choice in selecting their lender to obtain the necessary funding to meet their educational expenses.

*Federal Stafford Loans*—This is a fixed-rate loan as follows: For subsidized Stafford Loans disbursed on or after July 1, 2009, 5.6%; for unsubsidized Stafford Loans, 6.8%. Eligible students may apply for up to \$3,500 as freshmen, \$4,500 as sophomores, and \$5,500 as juniors and seniors. Students may also apply for a \$2,000 unsubsidized Stafford loan; review the Stafford loan chart at our website [gwired.gwu.edu/finaid](http://gwired.gwu.edu/finaid). For students who receive subsidized Stafford loans as part of their need-based financial aid award, the government pays the interest while they are enrolled in school at least half-time and for six months afterward. Students ineligible, or only partly eligible, for subsidized funds may apply for an unsubsidized Stafford Loan up to the same limits to cover their family contribution. Terms and conditions are the same, except that the student borrower is responsible for all interest that accrues on the unsubsidized loan from the date it is disbursed; deferments are available. Independent students (and students

whose parents are denied a PLUS loan) are eligible to borrow additional unsubsidized Stafford funds of \$4,000 as freshmen and sophomores and \$5,000 as juniors and seniors.

*Federal Parent Loan for Undergraduate Students (PLUS)*—This is a government-sponsored loan that can be used to supplement the student's Federal Stafford Loan or to help with the family contribution. It is a credit-based, fixed-rate loan currently at 8.5%. Each academic year, parents without an adverse credit history may apply for a PLUS loan up to the cost of education, minus financial aid, for each dependent child attending college at least half-time. Loan repayment begins within 60 days of the last disbursement and the maximum repayment term is 10 years.

Please note that Federal Stafford (subsidized and unsubsidized) and Federal PLUS loans are made by lenders, including banks, credit unions, and savings and loan associations. The loans are insured by a guaranty agency and reinsured by the federal government; origination fees are deducted from loan proceeds prior to disbursement. Families who intend to use loan funds for payment of University charges at time of registration should submit a loan application and all supporting documents to the Office of Student Financial Assistance no later than May 1 for the fall semester, October 1 for the spring semester, or March 1 for summer sessions.

*Alternative Loans*—Private lenders provide competitive alternative loan options to qualified students. These loans offer attractive interest rates and repayment options. Students and/or families should compare the Stafford, PLUS, and alternative loans to determine which better fits into the family budget. The loans allow the student to borrow up to 100% of GW's annual undergraduate cost of attendance less any current financial assistance. More information can be obtained from our website [gwired.gwu.edu/finaid](http://gwired.gwu.edu/finaid).

*Other Loan Funds*—The following loan funds are available to degree students. Complete information regarding each loan fund is available from the Office of Student Financial Assistance ([gwired.gwu.edu/colonialcentral](http://gwired.gwu.edu/colonialcentral)): Jessie B. Martin Loan Fund; Jack and Anne Morton Loan Fund; Barney Plotnick, M.D., Student Loan Fund; University Student Emergency Loan Fund; Edmund W. Dreyfuss Loan Fund; Peter and Doris Firsht Loan Fund.

### **Student Employment**

The University participates in the Federal Work–Study Program. Inquiries on eligibility should be addressed to the Office of Student Financial Assistance. Work–study job placement is handled by the Career Center. In addition, the Career Center maintains a registry of both full-time and part-time positions available in the Washington area for undergraduate and graduate students. After registration, students may apply at the Career Center for interviews and referrals to positions for which they are qualified.

### **International Students**

Undergraduate international students with proven financial need who have completed two semesters of full-time work (30 credit hours) at this University with a *C* average are eligible to apply for University and Alumni Awards. Aid is awarded in the spring for the following academic year. See instructions for applying for undergraduate financial aid, above. For those not filing a U.S. tax return, a letter from the employer, certifying salary and benefits, is required.

The maximum award for an international student is \$10,000 including any merit scholarship offered at the time of admission.

Students who wish to study in the United States should have sufficient funds available to cover expenses for one full year before attempting to enter a college or university. The cost at this University for one academic year (September–May) was \$55,625 in 2009–10 and is



expected to be higher in 2010–11; generally speaking, expenses for international students are about \$2,000 over the stated figure, which includes room and board, tuition, books, clothes, and incidental expenses, but not travel, holiday, or medical expenses.

### **Veterans Benefits and Services**

The Veterans Services office assists students entitled to educational benefits as active-duty personnel, veterans, or as widows or children of deceased or totally disabled veterans with any problems that may arise concerning their benefits. This office also processes certification of enrollment and attendance to the Veterans Administration so that educational allowances will be paid. More information can be found at [colonialcentral.gwu.edu/registrar/veteranservices](http://colonialcentral.gwu.edu/registrar/veteranservices).

When feasible, students entitled to educational benefits as active-duty personnel, veterans, or dependents of veterans should consult with the veterans counselor or check the website <http://gibill.VA.gov> prior to submitting applications to the Veterans Administration. All such students should obtain the instruction sheet issued by the veterans counselor; it sets forth requirements to be fulfilled before certification of enrollment can be made to the Veterans Administration and includes other information of general interest. Eligible students should be aware they must be admitted to a degree seeking program by the start of their third semester in order to continue receiving veterans benefits.

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## **STUDENT SERVICES**

### **Office of the Dean of Students**

The Office of the Dean of Students provides consultation and information for students, administers the nonacademic student disciplinary system and student grievance procedures, assists students in resolving complex issues, and supports nonacademic program development.

Staff members are well informed on University policies and the various student services provided on campus, enabling them to provide referrals and answers to many questions concerning general student life.

### **Office of the Dean of Freshmen**

The Office of the Dean of Freshmen is a source of advocacy and coordination, serving GW freshmen and their families as they make the transition to higher education. The office also coordinates student life programs and services on the Mount Vernon Campus, where the Dean of Freshmen resides.

### **GW Housing Programs**

Complete information concerning the University's housing is available from GW Housing Programs at [living.gwu.edu](http://living.gwu.edu). A range of community living environments and co-curricular initiatives are designed to promote student growth and development.

Admission to the University does not include a room reservation. The student will receive, with the notification of acceptance, University housing information, directions for completing a housing application and a declaration of intent to attend the University.

Rooms and apartments are available for the academic year, with assignments made by preference. Students must be registered full time in a degree program for at least 12 credit hours of academic course work during each of the fall and spring semesters. Seniors need not be enrolled for more credits than needed to graduate in their last semester.

Pursuant to an order of the District of Columbia Zoning Commission, all freshman and sophomore students are required to reside in University housing. Exemptions are available for students who are married or have children, have disabilities or religious beliefs inconsistent with residence hall living environments, commute from outside of the Foggy Bottom/West End area,

or have established permanent residency within the Foggy Bottom Campus/West End area.

Guidelines on applying for an exemption from the University housing requirement are available at the GW Housing Programs website at [living.gwu.edu](http://living.gwu.edu). A map identifying the boundaries of the Foggy Bottom/West End neighborhood is also linked at [living.gwu.edu](http://living.gwu.edu).

Early in the spring semester, eligible returning students submit an application to GW Housing Programs to reserve space in a residence hall for the next academic year. The application must be submitted by the date indicated in correspondence to students and on the website. Students under 18 years of age must receive the permission of their parent or guardian in writing before submitting the application. Housing charges appear on the student's Schedule and Invoice for each semester.

Charges for residence hall space are determined by hall, room size, and amenities. Exact costs for housing will be available on the [living.gwu.edu](http://living.gwu.edu) website.

### **Office of Off-Campus Student Affairs**

The Office of Off-Campus Student Affairs aims to educate GW students living in off-campus housing about their rights and responsibilities in the Foggy Bottom, West End, Foxhall, and greater metropolitan Washington communities. OCSA provides students with resources that address transitioning to off-campus living, living options in the District of Columbia/greater metropolitan area, and related information to help students make good decisions when they are off campus. The office works with neighbors in the local community to respond to concerns about student behavior in the local neighborhoods. OCSA strives to improve the Foggy Bottom/West End community by encouraging personal responsibility, neighborhood courtesy, and civic involvement.

### **GW Dining**

All undergraduate students residing in on-campus housing are required to participate in Colonial Cash, a non-refundable declining balance dining program, according to class standing (amounts listed are for the 2009–10 academic year): freshmen: \$3,400 (\$1,400 required to be spent at Marvin Center, Mount Vernon, and Duques Hall venues); sophomores, \$2,500 (\$500 required to be spent at Marvin Center, Mount Vernon, and Duques Hall venues); juniors, \$2,000; seniors, \$1,000. The Colonial Cash program is designed to maximize convenience and flexibility in spending at a variety of dining and retail locations on-campus and in the city. Current information regarding the Colonial Cash dining program is available at [www.gworld.gwu.edu](http://www.gworld.gwu.edu).

### **Student Health Service**

The Student Health Service is an outpatient clinic staffed by physicians, nurse practitioners, and physician assistants. Students can be evaluated and treated for most medical problems.

Psychiatrists are on staff to provide evaluations and referrals as well as crisis intervention. Visits should be arranged by appointment at [gwired.gwu.edu/shs](http://gwired.gwu.edu/shs); urgent problems may be seen on a walk-in basis if necessary. Additional charges for visits, labwork, and medication may apply. Health education and outreach programs on a variety of topics are provided throughout the year.

For serious emergencies occurring during hours when the Student Health Service is closed, students may go to the Emergency Room of the University Hospital for treatment. All fees are the responsibility of the student.

Students must be currently enrolled on campus in the University to receive treatment at the Student Health Service. Students enrolled in off-campus programs and continuing education programs are not eligible. Bills incurred both in and outside of the Student Health Service (for example, x-ray work, laboratory work, and office visits to private physicians) are the

responsibility of the student. Additional information about the Student Health Service can be found at [gwired.gwu.edu/shs](http://gwired.gwu.edu/shs).

### **Health and Accident Insurance**

The University recommends that all students be covered by health and accident insurance. For information on health insurance offered through the University, see [gwired.gwu.edu/shs](http://gwired.gwu.edu/shs).

### **Immunization Requirements**

It is the law in the District of Columbia that all students under the age of 26 have a record on file with the Student Health Service documenting immunity to measles, mumps, and rubella (two immunizations with the initial dose given after the first birthday or positive titers), varicella (chickenpox—by immunization, documented history of disease or positive titers), hepatitis B series, meningococcal vaccine, and a current tetanus/diphtheria booster (within 10 years prior to the beginning of the semester). This requirement applies to all students regardless of their program of study or degree status. Students registering for the first time will be able to do so without complete records on file, but any subsequent registration will be blocked if this requirement has not been fulfilled. Immunization forms are sent out by the GW admitting office. Forms can be downloaded from [gwired.gwu.edu/shs](http://gwired.gwu.edu/shs).

The Student Health Service can give all inoculations on a fee for service basis. Further information is available at 202-994-6827.

### **University Counseling Center**

University Counseling Center services help students address personal, social, career, and study problems that can interfere with their academic progress and success. Services include telephone assessments, brief individual counseling, crisis intervention, group counseling, and workshops on topics relevant to the GW student population. The Center offers consultation and outreach

programs for student, faculty, and staff groups. Further information about all services and links to psychoeducational materials can be obtained at [gwired.gwu.edu/counsel](http://gwired.gwu.edu/counsel). Information and referrals during business hours and after-hours emergency services are available at 202-994-5300.

### **Career Center**

The Career Center promotes effective career planning, teaches job search strategies, and facilitates contacts between GW students, alumni, and prospective employers through its many services. Services include full- and part-time job listings; internship listings; career consulting; workshops (including job search strategies, cover letters and resumes, and effective interviewing); the career resource room; on-campus recruiting; resume critiques; facilitating the federal work–study program; cooperative education programs. Further information on the Career Center is at [gwired.gwu.edu/career](http://gwired.gwu.edu/career).

### **Guide to Personal Success Program**

GW's Guide to Personal Success Program provides new undergraduates with a single point of contact for assistance with personal, professional, and experiential needs during the transition to campus. GPS guides support the resources of the various service departments across campus, working to help students learn to navigate the systems and support services of University life.

### **International Services Office**

The International Services Office provides services to GW's international students, scholars, faculty, and staff. The office provides advising on a variety of personal issues, including cultural adjustment, living conditions, academic concerns, and finances; provides immigration assistance and information on U.S. government requirements and regulations specific to the international community; conducts orientation programs to assist in living, studying, and working in the

United States; and serves as a resource center for the University community on issues of cross-cultural understanding.

### **Disability Support Services**

Disability Support Services (DSS) provides and coordinates accommodations and other services for students with a wide variety of disabilities, as well as those temporarily disabled by injury or illness. Accommodations are available through DSS to facilitate academic access for students with disabilities. To be eligible, a student must provide to DSS documentation that substantiates the need for such services in compliance with Section 504 of the Rehabilitation Act and the ADA. Services provided without charge to the student may include registration assistance, readers, interpreters, scribes, learning specialist services, adaptive materials and equipment, assistance with note taking, laboratory assistance, test accommodations, and referrals. DSS does not provide content tutoring, although it is available on a fee basis from other campus resources. The University does not provide or pay for transportation services or personal attendant care. DSS is located on the 2nd floor of the Marvin Center and is open from 9 a.m. to 5 p.m. weekdays. Additional information is available at [www.gwu.edu/~dss](http://www.gwu.edu/~dss).

### **Multicultural Student Services Center**

The Multicultural Student Services Center is a University-wide resource for multicultural information, communication, programs, and services. MSSC supports the academic, professional, personal, and spiritual growth of students in the multicultural community, while providing cultural education experiences and cross-cultural immersion and exposure for the entire campus community.

The Multicultural Student Services Center partners with student support service providers to help ensure that students of color are represented in every aspect of University life; integrated

into the fabric of University life; engaged in utilizing the services of the University; graduating at a rate comparable to their peers; and connected with the University family for life. MSSC is a critical player in maintaining a campus community that fosters the understanding and appreciation of cultural difference to ensure that GW students are prepared for an increasingly diverse world of work.

Significant resources on multicultural speakers, internships, scholarships, and job opportunities, as well as periodicals, are maintained by MSSC.

*High School/College Internship Program*—The Multicultural Student Services Center oversees the High School/College Internship Program (HI/SCIP), which enrolls highly motivated District of Columbia high school seniors. Participants enroll at GW as nondegree students, taking a maximum of 6 credit hours per semester in addition to their high school curriculum.

Application to the HI/SCIP program is made through the student's high school guidance office, and decisions are made by the GW Office of Undergraduate Admissions.

### **Office of Community Service**

The Office of Community Service is a primary platform for GW students, faculty, and staff interested in performing community service, both domestically and internationally. OCS sponsors a variety of service events throughout the year and works with students one-on-one and in teams to develop leadership skills and explore service career options. Additional information about OCS can be found at [gwired.gwu.edu/ocs](http://gwired.gwu.edu/ocs).

### **Student Activities Center**

The Student Activities Center furthers the educational mission of the University by offering programs, services, and resources that foster the personal, social, and cultural development of students to help build a sense of community within the entire University population. Staff



members assist individual students and campus organizations with event planning, program coordination, and participation in special projects.

Programs and activities include registration, oversight, and advising of student organizations; planning and coordination of special events; Colonial Inauguration; the LGBT Resource Center; Greek Life; and leadership development programs. Information about the many additional programs and services offered by the Student Activities Center can be obtained at [gwired.gwu.edu/sac](http://gwired.gwu.edu/sac).

*Program Board*—The Program Board provides programming and allocates resources for student programming on campus. In addition, the Program Board provides funding and services for activities presented by various campus organizations and encourages student participation in program planning through involvement in committees on the arts, concerts, festivals, films, parties, political affairs, and public relations.

*Student Government*—The GW Student Association is made up of all full-time and part-time undergraduate and graduate students who are registered for academic credit on campus. A body of elected and appointed individuals is responsible for representing the interests of students at the University. The Student Association provides various services for students, such as academic evaluations, test and syllabus files, and student advocacy.

Student involvement in the governance of the University is also possible through participation in various administrative and Faculty Senate committees, advisory councils of the schools and college, selected committees of the Board of Trustees, and specialized bodies, such as the Residence Hall Association, the Joint Food Services Board, and the Marvin Center Governing Board. This involvement has helped develop policies and programs beneficial to students and to the University community as a whole.

*Student Organizations*—Students are encouraged to become involved with existing student organizations or to initiate their own. There are over 350 registered organizations on campus, covering a broad spectrum of interests, including academic, professional, international, cultural, political, service, sports, hobbies, recreational, religious, and meditative groups as well as social fraternities and sororities.

### **The Cloyd Heck Marvin Center**

The Marvin Center is used by the GW community for conferences, celebrations, and special events, functioning as the center of student life on campus and hosting over 15,000 events and activities annually. The Center offers a wide range of retail services, including a variety of food and dining options, a travel office, and the GW Bookstore. Additionally, the Marvin Center is home to Colonial Central, a hub for student financial services, and to some 50 student organization offices, including the Marvin Center Governing Board, the Student Association, the Program Board, and the Cherry Tree.

### **Religious Life**

The University recognizes the contribution that religion makes to the life of its students and encourages them to participate in the religious organizations of their own choice. Local religious communities work in conjunction with student religious organizations. The advisors of the religious organizations are available for counseling and enhance religious life on campus. Religious services and special observances are also provided for the University community as announced.

### **Major Program Events**

*Art Exhibits*—The work of locally, nationally, and internationally known artists is shown in exhibitions in the Luther W. Brady Art Gallery in the Media and Public Affairs Building.

Student art exhibits are presented each semester in the Dimock Gallery in Lisner Auditorium.

*Concert Series*—The Department of Music presents a series of concerts featuring faculty, guest, and student artists throughout each year. Other concerts are held regularly on campus.

*Dance*—The Department of Theatre and Dance presents major dance concerts, informal studio performances, experimental events, television appearances, and lecture–demonstrations. Students may audition to participate and have the opportunity to choreograph, perform, and gain experience in the technical aspects of dance productions.

*Glee Club, Jazz Band, and Orchestra*—The University Singers, University Band, Jazz Band, and Orchestra are available to students as credit courses or as cocurricular activities; major performances are presented to the University community several times a year, including regular winter and spring concerts. Chamber groups and jazz combos are regularly available for participation by all students.

*Program Board*—The University Program Board, through its various committees and in cooperation with other campus groups, regularly sponsors films, lectures, concerts, social activities, and special events.

*Theatre*—The Department of Theatre and Dance produces four major plays and musicals during the year on the proscenium/thrust stage in the Dorothy Betts Marvin Theatre. Additional works, including original and experimental plays, are produced in a more intimate studio theatre. Students can participate in all aspects of theatre and may receive credit toward their B.A. or M.F.A. degrees for some of their production work.

### **Athletics, Recreation, and Intramurals**

The Lerner Family Health and Wellness Center offers students many options for physical activities, including courts for basketball and volleyball; courts for racquetball and squash; a jogging track; a swimming pool; and a cardio and free weight room. A broad program of intramural and recreational activities is held in the Lerner Family Health and Wellness Center designed to accommodate various levels of skill, fitness, experience, and interest. The Mount Vernon campus is home to an artificial-turf soccer/lacrosse/field hockey facility, a softball field, and 11 tennis courts.

The University is a member of the National Collegiate Athletic Association (NCAA), the Eastern College Athletic Conference (ECAC), and the Atlantic 10 Conference. Its intercollegiate varsity teams compete against major universities throughout the region and nation in basketball, baseball, soccer, lacrosse, softball, squash, tennis, golf, cross-country, crew, swimming, water polo, volleyball, and gymnastics. The Charles E. Smith Center is home to these intercollegiate varsity teams, which use the facility for practices as well as intercollegiate games, matches, and meets.

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## **OTHER PROGRAMS AND SERVICES**

The major sections that follow describe the undergraduate programs and courses offered by Columbian College of Arts and Sciences, the School of Business, the School of Engineering and Applied Science, the Elliott School of International Affairs, and the School of Public Health and Health Services. This section briefly indicates some of the University's additional programs, services, and administrative units.

### **The George Washington University at Mount Vernon College**

An integral part of The George Washington University, the Mount Vernon campus offers a traditional campus atmosphere a short distance from the Foggy Bottom campus. A distinct environment within the University, GW at MVC offers fully integrated academic courses and programs as well as social and athletic opportunities to all GW undergraduates. Students may reside either at the Mount Vernon or Foggy Bottom campus; all GW students have access to courses, programs, libraries, and other services at both campuses.

Courses at the Mount Vernon campus are offered by nearly all departments of Columbian College of Arts and Sciences and by selected departments and programs of the Elliott School of International Affairs and the Schools of Business, Engineering and Applied Science, and Public Health and Health Services. The campus is home to the interior design program at the undergraduate and graduate levels. Students and faculty move freely between the two campuses on the University shuttle that runs 24/7 during the academic year, taking 10 to 15 minutes.

GW at MVC offers a set of residential experiences, including the Elizabeth Somers Women's Leadership and the Forensic Sciences Programs. The Women's Leadership Programs include Women in Globalization, Economics, and Business; Women in U.S. and International Politics; Women in International Arts and Culture; and Women in Science, Health, and Medicine. Each provides a one-year academic living and learning experience for first-year women with a set of courses linked around the theme of women's leadership, historical as well as contemporary. The program courses fulfill certain general requirements in all the undergraduate schools. The teaching assistants for the academic courses also live together with the students in the residence hall, developing co-curricular activities that emphasize the supportive community, tying together the various strands of the program. The intent of this program is to create an integrated

community, which encourages energized classroom discussions that continue in the dining hall and the residence hall.

The Mount Vernon Campus Life Office coordinates student support services for GW at MVC, including the development of programs and services that create a distinctive environment for students on the Mount Vernon campus, cooperative programming with the Foggy Bottom campus, and the cultivation of leadership and community service opportunities for students.

### **University Honors Program**

The University Honors Program offers exceptional students opportunities to engage in advanced academic inquiry and conversation. The Honors proseminars, capped at 15–20 students, are characterized by an inquiry-based, interdisciplinary approach to learning with an emphasis on global and cross-cultural perspectives. The Honors curriculum in the first two years explores the traditions of Western and Eastern thought; modes of scientific inquiry; the relationship of art and culture; and the social sciences as a way to understanding ourselves, society, and the cultural forces at work in the world. In the third and fourth years, students pursue work in their major fields and engage in independent or mentored research opportunities. All students participate in the capstone Honors Global Issues Project and complete an Honors or departmental senior thesis or project.

In addition, the University Honors Program invites its members to initiate and to participate in a range of Honors community activities designed to complement the curriculum, including special lectures, informal discussions on topics of current importance and interest, faculty-led excursions to explore the D.C. area's intellectual, cultural, and recreational offerings, and get-togethers in the Honors Club Room.

**Enosinian Scholars**—Named for the first undergraduate academic society established at The George Washington University in 1822, the Enosinian Scholars Program is a special senior-year thesis program that requires two semesters of research, a written thesis, and an oral examination with outside reviewers. Students in the Enosinian Scholars Program may also pursue Special Honors in their department or program. Application to the Enosinian Scholars Program is made through the University Honors Program, which administers the Enosinian Scholars Program; membership in the Honors Program is not required.

### **Welling Professors**

The George Washington University has a category of distinguished “occasional” professorships known as the Welling Professors. The professorships are named for James Clark Welling, who was president of GW for most of the last quarter of the 19th century, during which time this institution assumed many of the attributes of a modern research university. The intent of the Welling Professorships, established in 1995, is to bring internationally distinguished scholars to GW on an occasional basis and engage them in the intellectual life of students and faculty through public lectures, small group discussions, and other forums.

### **Residential Educational Programs**

Among the many living and learning opportunities available at GW are enhanced educational programs in which first-year students reside together and take a common course or series of courses. Programs include Politics and Values, Dean’s Scholars in Globalization, and the Elizabeth Somers Women’s Leadership Programs. Further information is available from GW Housing Programs.

### **Joint and Dual Degree Programs**

A large number of combined programs allow students to earn a bachelor's degree and a master's degree, with a modest amount of cross-crediting of course work. Programs available within Columbian College of Arts and Sciences are listed under the department concerned; programs within the School of Business, the School of Engineering and Applied Science, and the School of Public Health and Health Services are listed under the respective school's entry.

The Application for Admission lists combined programs leading to bachelor's and master's degrees that students may enter when they are admitted as freshmen. Most combined degree programs that admit freshmen have specific performance criteria that must be met to remain in the program.

The combined degree program leading to the B.A./M.D. is briefly described under Columbian College of Arts and Sciences.

### **Secondary Fields of Study**

A program of secondary fields of study provides undergraduates opportunities for formal interschool study. Students must be enrolled in a degree program and in good academic standing to be eligible to take a secondary field in another school. The secondary fields generally consist of 12 to 18 hours of prescribed courses, with scholarship requirements determined by the school offering the field. Upon satisfactory completion of all requirements, the secondary field and the courses taken in support of the field are entered on the student's transcript. Information is available in the student services offices of the schools concerned.

### **Summer Sessions**

Courses are offered during the summer by all degree-granting divisions of the University. Summer Sessions also offers special programs that are not available during the regular academic year. Courses are offered during both day and evening hours. Students who are enrolled at the



University for the spring semester may register for the following Summer Sessions without special application. Those who wish degree status may seek admission from the appropriate school within the University. Those who do not wish to work toward a degree at the University may apply through the process described in the Summer Sessions Announcement. For a complete statement concerning summer term work, see the Summer Sessions Announcement at [www.gwu.edu/summer](http://www.gwu.edu/summer) or contact 202-994-6360 or [gwsummer@gwu.edu](mailto:gwsummer@gwu.edu).

### **Study Abroad**

Undergraduates who wish to study abroad during the academic year should contact the Office for Study Abroad concerning eligibility, appropriate procedures, and requirements for participation. Participants are billed GW charges for study abroad, rather than fees indicated by the visited school or program. To be eligible for the transfer of academic credit from study abroad, GW students must select a program from the University's authorized list of study abroad programs. Students must have a 2.75 cumulative grade-point average at the time of application and must have completed 45 credit hours prior to departure. Transfer students must complete one full semester at GW prior to application. Students who have a significant disciplinary history or who are on academic or disciplinary probation at the time of application are not eligible to study abroad. All programs of study abroad must be approved on the required forms prior to departure. Non-GW course credits earned in authorized programs with a *C* or above are transferable toward the appropriate degree at The George Washington University, provided there is no duplication of work done previously and faculty have designated each course with a GW course equivalent. Participants agree to abide by all procedures and regulations for study abroad as indicated in the Study Abroad Handbook, Memorandum of Agreement, and Participation Agreement distributed

through the Office for Study Abroad. In addition to academic year programs, study abroad is available at varying locations during the summer; see Summer Sessions, above.

### **Office of University Students**

The Office of University Students makes main-campus, credit-bearing courses available to those who are not currently degree candidates at this University. Such students, often employed in government or industry, may be taking courses to enhance their career potential or as a matter of personal interest. They may be candidates for higher degrees at other institutions, sent here for special work as part of a graduate program. They may be undergraduates matriculated elsewhere, taking courses for transfer to their own institution or preparing for graduate work.

The Office of University Students allows a maximum of 18 credits at the undergraduate level and 12 at the graduate level, except in special circumstances as approved by the director.

Medical and law courses are not available to nondegree students.

*Entrance Requirements*—The Office of University Students requires visiting, nondegree applicants to have appropriate academic preparation prior to enrollment. Prerequisites are specified in the departmental course descriptions in this Bulletin. Contact the specific department for further information regarding appropriate academic background for a particular course. In addition, the applicant who has previously attended this or another college or university must be in good standing at that institution. An applicant who has been suspended from any educational institution for poor scholarship will not be considered for admission for one calendar year after the effective date of the suspension. An applicant who has been denied undergraduate admission within this University will not be considered for admission as a nondegree student for the same semester for which the application was denied. Applications for admission through the Office of

University Students are available online at the OUS website. For information on application and registration, please refer to the Schedule of Classes or visit [www.gwu.edu/~ous](http://www.gwu.edu/~ous).

*Tuition and Fees*—For information regarding fall and spring semester tuition and fees, see Fees and Financial Regulations in this Bulletin. For information on summer tuition and fees, see [www.gwu.edu/summer](http://www.gwu.edu/summer) or contact 202-994-6360 or [gwsummer@gwu.edu](mailto:gwsummer@gwu.edu).

*Regulations*—Prospective and registered students are urged to acquaint themselves with the regulations concerning attendance and withdrawal under University Regulations in this Bulletin or at [www.gwu.edu/~ous](http://www.gwu.edu/~ous).

The deadline for adding a course during the regular fall and spring semester is the end of the second week of classes. A course dropped during the first four weeks of classes will not appear on a student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned the grade of *W* (Authorized Withdrawal). The deadline for dropping a course without academic penalty is the end of the eighth week of classes. The deadline for complete withdrawal from a student's entire program of courses without academic penalty is the end of the ninth week of classes.

If the symbol *I* (Incomplete) is assigned, the instructor normally sets a period (maximum of one year) within which the uncompleted work must be made up. An Incomplete that is not changed within one calendar year becomes a grade of *IF* on the student's record.

All adjustments to course schedules during a regular summer session must be made within the first seven days of the official start of classes.

### **Consortium of Universities of the Washington Metropolitan Area**

The George Washington University is a member of the Consortium of Universities of the Washington Metropolitan Area. Twelve universities in the Washington area—American

University, Catholic University of America, Gallaudet University, George Mason University, George Washington University, Georgetown University, Howard University, Marymount University, Southeastern University, Trinity University, the University of the District of Columbia, and the University of Maryland—are associated in a Consortium through which they coordinate the use of their respective facilities. Students in approved programs leading to degrees in any one of these institutions have the opportunity to select from the combined offerings the particular courses that best meet their needs. This privilege is subject to regulations of the school in which the student is enrolled. Participation is limited to degree candidates. Law and medical students are excluded from participation, except for LL.M. candidates. See the Schedule of Classes for specific regulations and information concerning registration for Consortium courses.

Registration forms and instructions are available from the registrar of the institution in which the student is enrolled. Students register and pay tuition at their own institutions for all Consortium courses; course fees are payable to the visited institutions.

George Washington University students may enroll through the Consortium in the Army ROTC program offered at Georgetown University, the AFROTC program at the University of Maryland, or the Army ROTC or AFROTC at Howard University. Scholarships are available. Those interested should contact the ROTC enrollment officer at one of these universities. Limited credit for such courses (primarily advanced ROTC) may be assigned for electives to meet degree requirements at George Washington University; prior approval is required by the dean of the school in which the student is enrolled.

### **The University Libraries**

The library collections of over two million volumes are housed in Melvin Gelman Library (the general library of the University), Jacob Burns Law Library, Paul Himmelfarb Health Sciences

Library, the Virginia Campus Library, and Eckles Memorial Library on the Mount Vernon campus. The George Washington University is a member of the Association of Research Libraries, whose mission “influences the changing environment of scholarly communication and the public policies that affect research libraries and the communities they serve.”

The libraries strive to fulfill the curricular and research needs of the University’s students. University appropriations supplemented by endowments and gifts provide electronic and paper research materials in the social sciences, the humanities, the sciences, engineering, education, business, law, medicine, and public health. Gifts from many sources have enriched the collections.

Information about using the libraries is available on the libraries’ websites and at library service desks. Individual and class instruction in the use of the libraries and orientation to library facilities are given by librarians upon request as well as through print, media, and computer-assisted instruction. Through use of the many journal article databases and online resources, students identify and locate desired research materials not easily found through more traditional methods. The libraries’ staff assist members of the University in using the rich resources of the Washington area and the unusual opportunities they offer for extensive research.

Students, faculty, and staff at George Washington University (except students in the Law School and Medical Center) may borrow directly and remotely, using the consortium loan service, from the libraries of the seven other academic institutions in the Washington Research Library Consortium (WRLC). Members of the GW community may also obtain resources from other libraries in the area and throughout the United States using other library consortial arrangements and interlibrary loan.

The libraries provide a WRLC combined online catalog representing nearly 3.8 million titles and over 7.4 million volumes. ALADIN, the online research portal for the libraries, offers access to over 200 databases and can be accessed via the Internet from numerous computers in the libraries, residence halls, and University offices, as well as remotely from off campus.

### **The Writing Center**

The Writing Center provides writing assistance to GW students for all courses, both undergraduate and graduate, in all schools of the University and at all levels of experience and expertise. Students receive assistance in identifying writing problems and learning how best to express ideas. Trained tutors (undergraduate peer tutors, graduate students, and the director and other members of the faculty) work with students individually on areas of specific need or interest. Tutors provide assistance in such areas as organizing a mass of information efficiently and clearly, using correct grammar and punctuation, getting started on a writing project, developing a thesis, providing evidence in support of an argument, and presenting the findings of an experiment or the solution to a research problem.

### **Honor Societies**

Honor societies that maintain active chapters at George Washington University include Phi Beta Kappa and Sigma Xi as well as those specific to given academic fields, such as Alpha Epsilon Delta, Beta Alpha Psi, Beta Gamma Sigma, Delta Phi Alpha, Eta Kappa Nu, Omicron Delta Epsilon, Omega Rho, Pi Alpha Alpha, Pi Sigma Alpha, Pi Tau Sigma, Psi Chi, Sigma Delta Pi, Sigma Iota Rho, and Tau Beta Pi. The freshman honor society Phi Eta Sigma is open to qualified students in all undergraduate programs, and the National Society of Collegiate Scholars recognizes scholarship, community service, and leadership.

### **Prizes**

The following academic prizes are supported by permanently endowed funds established through the Office of the Vice President and Treasurer. The many other prizes and awards available to GW students are funded annually, rather than by permanent endowment, and are listed in the annual commencement program when information is provided in time for publication.

*Abdelfattah Abdalla Prize*—Awarded annually to a junior or senior in the Department of Electrical and Computer Engineering for scholarship and service.

*Norman B. Ames Memorial Prize*—Awarded annually to a graduating senior in the School of Engineering and Applied Science who has made significant contributions to the School and the University.

*Buka Family Prize*—Provided by Ruth Buka in honor of her parents, Georg and Rosa Buka, and her sister, Hilde Buka-Lacour. It is awarded to the most outstanding student in German language and literature.

*Byrne Thurtell Burns Memorial Prize*—Awarded to the senior majoring in chemistry who shows the greatest proficiency in organic chemistry, as evidenced by a comprehensive examination, and who possesses such qualifications of mind and character as to give promise of future achievement.

*Wilbur J. Carr Prize*—Established in 1962 by Edith K. Carr, former Trustee of the University, in memory of her distinguished husband, who was graduated from the School of Comparative Jurisprudence and Diplomacy in 1899. It is awarded annually to that student in the graduating class of the University who has demonstrated outstanding ability in the study of international affairs and who has given evidence of possessing in marked degree the qualities that produce the good citizen and the dedicated public servant.

*Astere E. Claeysens Prize*—Established in 1981 by the Trustees of the Bess and Arthur Dick Family Foundation. It is awarded for the best original work in playwriting by a student enrolled in the University.

*John Henry Cowles Prizes*—Two prizes, established by John H. Cowles, Grand Commander of the Supreme Council of Thirty-third Degree (Mother Council of the World) of the Ancient and Accepted Scottish Rite of Freemasonry, Southern Jurisdiction of the United States of America. Awarded upon graduation to the graduate or undergraduate student with the best overall scholastic achievement and leadership potential in the School of Business and in the Elliott School of International Affairs.

*DeWitt Clinton Croissant Prize*—Awarded annually to the undergraduate student enrolled in a course in drama or active in University dramatics who submits to the English Department the best essay on drama or the theater.

*E.K. Cutter Prize*—Established by Marion Kendall Cutter “for excellence in the study of English.” Awarded to the member of the graduating class whose record in English, combined with general excellence, shows the most marked aptitude for and attainment in English studies.

*Isaac Davis Prizes*—Established in 1847 and awarded annually to the three seniors who have made the greatest progress in public speaking while enrolled in the University. Awards are determined by a public-speaking contest in which the participants deliver original orations. Only members of the senior class of Columbian College who are candidates for the degree of Bachelor of Arts or Bachelor of Science are eligible to compete.

*Elton Prize*—Established by the Reverend Romeo Elton, of Exeter, England, and awarded annually to the student with the highest average in the most advanced course in the Greek language and literature.



*Jesse Frederick Essary Prize in Journalism*—Established by Helen Essary Murphy and awarded annually to a student who has given promise of sound citizenship and who submits the best printed and published evidence of ability in “forthright reporting” and good journalistic writing in a student publication or elsewhere.

*Jessie Fant Evans Prize*—A bequest of Joshua Evans, Jr., in 1971, in recognition of his wife’s distinguished record at and service to the University, on whose Board of Trustees she served as the first woman member. Awarded annually to an outstanding senior student in a contemporary history course.

*Joshua Evans III Prize in Political and Social Science*—A memorial prize “established by friends because of an outstanding life.” Awarded annually to that student in the graduating class “who has demonstrated his/her signal ability in the social and political sciences and who has given promise of the interpretation of that ability in good citizenship among his/her fellows.”

*Willie E. Fitch Prize*—Established by James E. Fitch in memory of his son. Awarded annually to a senior student for the best examination in chemistry.

*Alfred Martin Freudenthal Prize*—Awarded annually to the senior in the School of Engineering and Applied Science who graduates with the highest scholastic standing.

*Goddard Prizes*—A memorial established by Mary Williamson Goddard, Alice Douglas Goddard, and Frederick Joseph Goddard. Three prizes are awarded annually to junior or senior students earning the highest average in American literature; French language and literature; and business administration or accounting.

*Harmon Choral Prize*—Established in 1986 in memory of Dr. Robert H. Harmon, director of the Glee Club from 1924 to 1964, by his brother Bishop Nolan Harmon and the GW Department

of Music. Awarded annually to one or two students who have made outstanding contributions to the choral programs.

*Ching-Yao Hsieh Prize*—Two prizes awarded annually, one to an undergraduate and one to a graduate student in the Department of Economics.

*Gardiner G. Hubbard Memorial Prize in United States History*—Established by Gertrude M. Hubbard in memory of her husband and awarded annually to that member of the graduating class majoring in history who has maintained the highest standing in courses in United States history.

*Cecille R. Hunt Prize*—Offered annually to deserving art students.

*Korean Language and Culture Prize*—Awarded annually to a student enrolled in a Korean language/culture course.

*Minna Mirin Kullback Memorial Prize*—Established in 1968 by Solomon Kullback in memory of his wife. Awarded annually by a committee of faculty members of the Department of Statistics to a full-time undergraduate or graduate student majoring in statistics, who will have completed 18 credit hours of statistics courses by the end of the spring semester.

*John Francis Latimer Prize in Classics*—Established in 1973. Awarded to a graduating senior who has made the most outstanding record as a major in the Department of Classics.

*Martin Mahler Prize in Materials Testing*—Awarded to the upper-division or graduate student in engineering who submits the best reports on tests in the materials laboratory course, with preference given to prestressed concrete tests.

*Hilda Haves Manchester Prize in Sociology*—Established in honor of Hilda Haves Manchester, B.A. 1932, an outstanding student whose major field was sociology. Awarded annually by Columbian College to the senior student majoring in sociology who has the highest scholastic record.

*The Barry Manilow Endowed Prize in Music*—Established in 1983. Awarded annually to a student majoring in music. The award is made on the basis of academic performance and musical ability, as determined by a committee of faculty appointed by the chair of the Music Department.

*Vivian Nellis Memorial Prize*—Awarded to a student in the English Department who has shown special promise in the field of creative writing.

*Ruggles Prize*—Established by Professor William Ruggles in 1859. Awarded annually to a candidate for a bachelor's degree for excellence in mathematics.

*Howard C. Sacks Prize*—Awarded to a student in political science who has demonstrated outstanding academic achievement in the study of Far Eastern affairs.

*Hermann and Johanna Richter Schoenfeld Prize*—Established in grateful appreciation of the inspired teaching and devotion to his students of Dr. Hermann Schoenfeld, who for more than 20 years until his death in 1926 headed the Department of German. Hermann Schoenfeld, Ph.D., LL.D., was widely recognized as a scholar of distinction whose presence on the faculty added prestige to the University. This prize is given annually to a member of the graduating class for excellence in historical and cultural phases of German studies.

*Julian H. Singman Prizes*—Two prizes awarded annually, one in design and one in aquarelle painting.

*Sylvia S. Speck Prize*—Awarded to a graduating senior for exemplary academic achievement in English literature.

*Staughton Prize*—Established by the Reverend Romeo Elton and awarded annually to the student making the best record in the most advanced courses in Latin language and literature.

*Alfred E. Steck Memorial Prize*—Awarded for proven excellence in the field of sculpture.

*James MacBride Sterrett, Jr., Prize*—Established in 1911 by Professor Sterrett in memory of his son. Awarded annually to the student who obtains the highest average in Physics 11 and 12.

*Charles Clinton Swisher Historical Club Prize*—Established in 1936 by the Charles Clinton Swisher Historical Club and augmented in 1941 by the bequest of Professor Swisher. Awarded annually to the student who submits the best essay covering some phase of medieval history.

*Thomas F. Walsh Prize*—Established in 1901 and awarded annually to the student who submits the best essay in Irish history.

*Alexander Wilbourn Weddell Prize*—Established in 1923 by Virginia Chase Weddell in memory of her husband. Awarded annually to a degree candidate who writes the best essay on “the promotion of peace among the nations of the world.” The prize essays shall become the property of the University and shall not be printed or published without the written consent of the University. The University reserves the right to withhold the award if no essay attaining the required degree of excellence is submitted.

### **GW Alumni Association**

The objectives of this organization are to unite the graduates who wish to associate themselves for charitable, educational, literary, and scientific purposes, and to promote the general welfare of the University.

Membership in the Association is conveyed automatically to anyone who has been graduated from any school or division of the University. Anyone who has earned 15 credit hours or the equivalent at the University, who has left the University in good standing, and whose class has graduated is eligible for membership; in the case of the Office of University Students, however, only the “15 credit hours earned” requirement and not the “graduation of the class” requirement applies. Graduates of Center for Professional Development certificate programs are also eligible.

A Governing Board, composed of members representing the constituent alumni organizations, directs the activities of the Association. The voluntary leadership of the Association works closely with the staff of the Office of Alumni Relations in carrying out Association affairs. The Association may be contacted through the Office of Alumni Relations.

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## **UNIVERSITY REGULATIONS**

Students enrolled in the University are required to conform to the following regulations and to comply with the requirements and regulations of the school in which they are registered.

Students who withdraw or are suspended, or who, for any other reason, are not registered at the University for one semester or more, may reapply and, if readmitted, continue their program only under the regulations and requirements in force at the time of return.

If a student knowingly makes a false statement or conceals material information on an application for admission or any other University document, the student's registration may be canceled. If such falsification is discovered after the student has matriculated at the University, the student may be subject to dismissal from the University. Such a student will be ineligible (except by special action of the faculty) for subsequent registration in the University.

### **Registration**

Information on registration procedures is stated on the Registrar's Office website and in the Schedule of Classes, which is available in advance of each semester.

Registration in courses is open only to those persons formally admitted to the University by the appropriate admitting office and to continuing students in good standing.

Students may not register concurrently in this University and another institution without the prior permission of the dean of the school in which they are registered in this University. With

the exception of students enrolled in a joint degree program, registration in more than one school of the University requires the written permission of the deans concerned, prior to registration. Registration is not complete until all financial obligations have been met. Individuals without a valid registration may not attend class or earn any course credit.

**Eligibility for Registration**—Registration for the following categories of on-campus students is held on the days of registration indicated in the Schedule of Classes. A student who is suspended or whose record is encumbered for any reason is not eligible to register. Registration in a given course may be denied to nondegree students by the Office of University Students when space is needed for degree candidates.

*New Student*—Upon receipt of a letter of admission, the new student is eligible for registration on the stated days of registration. Registration for new students is typically conducted on stated days as part of the Colonial Inauguration orientation program.

*Readmitted Student*—A student previously registered in the University who was not registered during the preceding semester must apply for and be granted readmission by the appropriate admitting office before being eligible for registration.

*Continuing Student*—A student registered on campus in the immediately preceding semester or the summer session preceding the fall semester is eligible to register assuming good standing and enrollment in a continuing program.

**Completion of Registration**—Registration is not complete until financial obligations have been fulfilled. Students who do not complete their financial obligations in a timely manner may have their registration canceled and will not be permitted to attend class.

**Registration for Consortium Courses**—Degree students interested in taking courses at any of the other institutions in the Consortium of Universities of the Washington Metropolitan Area,

Inc., should consult the program announcements of the other institutions. Consortium registration forms and instructions may be picked up in the Office of the Registrar. In order to participate in the Consortium program, students must obtain the approval of an advisor and should ascertain from the department of the institution where the course is taught whether they are eligible for the course and whether there is space in the class. Specific inquiries should be addressed to the Registrar's Office. Detailed information concerning Consortium policy and procedures is printed in the Schedule of Classes and is available on the Registrar's Office website.

### **Adding and Dropping Courses**

During the registration period (before the end of the second week of classes) students may add or drop courses using GWeb. After the second week of classes, students who wish to add or drop a course must complete a Registration Transaction Form and submit the form to the office of their dean; forms are available on line, at deans' offices, and in the Office of the Registrar. Adding a course after the second week requires a signature of the instructor or other authorized member of the department.

A course dropped during the first four weeks of classes will not appear on the student's transcript. A course dropped after the fourth week but before the end of the eighth week will be assigned a notation of *W* (Authorized Withdrawal).

The deadline for dropping a course without academic penalty is the end of the eighth week of classes in the fall and spring semesters. After the end of the eighth week of classes, dropping a course without academic penalty is only possible after the student presents a petition to the dean and receives written permission.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to withdraw by these

procedures can result in an extended financial obligation and the recording of a grade of *F* (Failure) or a notation of *Z* (Unauthorized Withdrawal).

### **Changes in Program of Study**

*Changes Within a School*—A student may not substitute one course for another within an established program of study or change status from credit to audit or from audit to credit without the approval of the dean of the school in which he or she is registered. Change from one major field to another within the same school may be made with the approval of the dean.

*Transfer Within the University*—Application for transfer to another school must be made to the appropriate admitting office on the form provided by the office concerned. Students transferring within the University are advised to study carefully the requirements listed below under Graduation Requirements and to note that unless otherwise specified, in all undergraduate divisions, 30 credit hours, including at least 12 credit hours in the major field, must be completed while registered in the school from which the degree is sought. Upon transfer the student should consult the dean concerned and understand clearly the requirements that must be fulfilled. A maximum of 45 credit hours earned through the Office of University Students may be applied toward a bachelor's degree in the degree-granting schools of the University.

### **Grades**

Grades are made available to students through the Office of the Registrar after the close of each semester. The following grading system is used: *A*, Excellent; *B*, Good; *C*, Satisfactory; *D*, Low Pass; *F*, Fail; other grades that may be assigned are *A–*, *B+*, *B–*, *C+*, *C–*, *D+*, and *D–*. Symbols that may appear include *AU*, Audit; *I*, Incomplete; *IPG*, In Progress; *W*, Authorized Withdrawal; *Z*, Unauthorized Withdrawal; *P*, Pass; *NP*, No Pass; *R*, Need to Repeat Course.



Except for courses that specifically state that repetition for credit is permitted, a candidate for a degree at this University may not repeat a course in which a grade of *D–* or better was received, unless required to do so by the department concerned. A written statement, indicating that the student is required to repeat the course, must be submitted to the student's dean by the appropriate department chair.

The symbol of *Z* is assigned when students are registered for a course that they have not attended or have attended only briefly, and in which they have done no graded work. At the end of the academic year, students' records are reviewed; if there is more than one *Z* per semester, a student's record will be encumbered until released by the student's advisor or academic dean. The symbol of *Z* is not a grade but an administrative notation.

**Incompletes**—The symbol *I* (Incomplete) indicates that a satisfactory explanation has been given the instructor for the student's inability to complete the required course work during the semester of enrollment. At the option of the instructor, the symbol *I* may be recorded if a student, for reasons beyond the student's control, is unable to complete the work of the course, and if the instructor is informed of, and approves, such reasons before the date when grades must be reported. This symbol may be used only if the student's prior performance and class attendance in the course have been satisfactory. Any failure to complete the work of a course that is not satisfactorily explained to the instructor before the date when grades must be turned in will be graded *F*, Failure. If acceptable reasons are later presented to the instructor, that instructor may initiate an appropriate grade change, which in all cases will include the symbol *I*. The course work must be completed within the designated time period agreed upon by the instructor and student, but (except in the School of Business) no more than one calendar year from the end of the semester in which the course was taken. In the School of Business, the symbol *I* must be

changed by a date agreed on by the instructor and the student, but no later than the last day of the examination period for the fall or spring semester immediately following the semester or summer session in which the symbol *I* is assigned. All students who receive an Incomplete must maintain active student status during the subsequent semester(s) in which course work is being completed. If not registered in other classes during this period, the student must register for Continuous Enrollment status.

When work for the course is completed, the instructor will complete a grade change form and turn it in to the Office of the Registrar. The grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed and remains on the student's permanent academic record even after the course has been successfully completed. If work for the course is not completed within the designated time, the grade will be automatically converted to a grade of *IF*, Incomplete/Failure, 0 quality points, and the grade-point average and academic standing recalculated.

**The Grade-Point Average**—Scholarship is computed in terms of the grade-point average, obtained by dividing the number of quality points by the number of credit hours for which the student has registered, both based on his or her record in this University. The grade-point average is computed as follows: *A*, 4.0; *A–*, 3.7; *B+*, 3.3; *B*, 3.0; *B–*, 2.7; *C+*, 2.3; *C*, 2.0; *C–*, 1.7; *D+*, 1.3; *D*, 1.0; *D–*, .7; *F*, 0, for each credit hour for which the student has registered as a degree-seeking student. Although credit value for a course in which a grade of *F* is earned appears on the transcript for the purpose of calculating the grade-point average, no academic credit is awarded. In the case of a student who is allowed to repeat a course, the first grade received remains on the student's record and is included in the grade-point average. Courses marked *AU*, *CR*, *I*, *IPG*, *P*, *NP*, *R*, *W*, or *Z* are not considered in determining the average, except

that courses marked *I* will be considered when a final grade is recorded. With the exception of Consortium courses, grades in courses taken at other institutions are not considered in computing the grade-point average.

### **Latin Honors**

Bachelor's degrees with honors are awarded to students whose academic records give evidence of particular merit. The student's grade-point average determines the level of honors as follows: *cum laude*, 3.4–3.59; *magna cum laude*, 3.6–3.79; *summa cum laude*, 3.8–4.0. The grade-point average includes all course work completed at GW. To be eligible for an honors designation, a student must complete at least 60 hours of course work with letter grades (grades included in calculating the grade-point average) at GW.

The grade-point average is calculated by the Office of the Registrar, and the honors designation is entered on the transcript and diploma of those students who earn an honors designation. If Latin honors are entered in the commencement program, honors status will be determined on the basis of work completed by the end of the seventh term and entered only for those students who have completed seven-eighths of the credit hours required for the degree. Latin honors indicated on the diploma are calculated on the basis of all course work completed. The diploma and transcript are the official indication that a degree was conferred and Latin honors awarded.

### **Special Honors**

Special Honors may be awarded by the faculty to any member of the graduating class for outstanding achievement in the student's major field on recommendation of the major department. The student must fulfill all of the following requirements: (1) Candidacy for Special Honors must be approved by the faculty member representing the major department or field not

later than the beginning of the senior year. (2) Such other conditions as may be set at the time the candidacy is approved must be met. (3) At least one-half of the courses required for the degree must have been completed at GW. (4) The specific minimum requirement of the school in which the student is registered must be fulfilled as follows: (a) Columbian College of Arts and Sciences—a grade-point average of 3.0 on all course work taken at GW; (b) the Elliott School of International Affairs—a grade-point average of 3.4 on all course work taken at GW; (c) the School of Public Health and Health Services—a grade-point average of 3.25 on all course work taken at GW. Special Honors awards appear on the transcript.

### **Double Majors**

Students can declare no more than two majors; they can pursue minors or secondary fields in addition to the two majors if they wish but are generally advised against pursuing too many specializations.

Students who graduate with the requisite hours for one degree, having fulfilled the major requirements in more than one department, program, and/or school, will receive one degree. They must select a primary degree and major, as only the primary degree will show on the diploma, along with the two majors.

Students who complete the major requirements in a school other than their own in addition to the major requirements in the school in which they are enrolled (assuming that there is an agreement allowing such between the relevant schools) will receive the degree in the major of their own school and a notation on the transcript and diploma that testifies to completion of requirements for a secondary major. It is understood that requirements of the secondary major do not include the general education requirements of the second school.

Students who complete the major requirements for a degree different from the one they will receive in their own school will receive the degree of the relevant major in their own school. For example, a SEAS student completing the degree requirements for a B.S. in computer science and the major requirements for a B.A. in fine arts will receive a B.S. in computer science with a secondary major in fine arts.

Students who complete two majors in the same school also receive one degree with two majors; if one major leads to a B.A. and one to a B.S., the student must declare a primary major and will receive the degree associated with that major.

### **Double Degrees**

In order to receive two bachelor's degrees from GW, either sequentially or simultaneously, a student must first have applied to and been admitted by the school or college that offers the second degree. To apply for the second degree, the student must have an overall GW grade-point average of at least 3.3 and have not completed more than 90 credits toward graduation. The student must satisfy the general and related requirements for the first degree and the major requirements for both degrees. In the process, the student must complete at least an additional 30 credits, chosen in consultation with the student's advisor from each major, program, or school, beyond the credits required to earn one degree. At least 90 of the total credits required for the two degrees must be earned at or through the University. Different requirements apply for specific joint degree and dual degree programs.

### **Graduation Requirements**

Degrees are conferred in January, May, and August. To be eligible for graduation a student must have met the admission requirements of the school in which registered; completed satisfactorily the scholarship, curriculum, residence, and other requirements for the degree as stated in this

bulletin; filed an application for graduation by the published deadline date; and be free from all indebtedness to the University. Enrollment is required for the semester or summer at the close of which the degree is to be conferred, and all degree requirements must be completed by the last day of final examinations for that semester or summer session. Students who pursue a double major across two schools must complete the primary major in their own school in order to graduate. A second major may supplement the primary major but may not substitute for it.

*Participation in the Commencement Ceremony*—Participation in the annual commencement ceremony held in May is open to students who have applied to graduate in the current spring semester or who graduated the preceding fall semester or summer session. Students, graduate or undergraduate, who need no more than 9 credit hours to complete their degree requirements, may participate in May commencement ceremonies if there is a reasonable expectation that they will be able to obtain the needed credits during the following summer. The maximum of 9 credit hours is firm and not subject to petition. Summer graduates who elect to attend the preceding May ceremony must apply for graduation no later than February 1. Students who apply after the published deadlines are not guaranteed commencement materials.

### **Continuous Enrollment Status**

Once entered in a degree program, a student is expected to be continuously enrolled and actively engaged in fulfilling the requirements for the degree each semester of the academic year until such time as the degree is conferred. A student is considered to be continuously enrolled when registered for courses or when engaged in and appropriately registered for activities such as the following, with the prior approval of the school in which the student is enrolled: cooperative work semester; study abroad program; attendance at another institution with prior approval to have work transferred back to the GW program; completion of outstanding work in courses in

which a grade of Incomplete or In Progress was received; or non-course instructional activities unique to the particular school. This status is generally limited to one year. Should the student break continuous enrollment at the University and not request and be granted a leave of absence (see below), he or she must apply for readmission and, if granted, be subject to the requirements and regulations then in force.

### **Leave of Absence**

Should a degree student find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specific period of time, generally limited to one calendar year. A degree student who discontinues active enrollment in degree studies without being granted a leave of absence, or a student granted a leave who does not return to active study at the close of the period of approved absence, must apply for readmission and be subject to the regulations and requirements then in force. The right to use of University facilities is suspended while the leave is in effect.

### **Policy Regarding Students Called to Active Military Duty**

Any student who is a member of a military reserve unit or the National Guard and is activated or called to active duty early in a semester or summer session automatically will be entitled to a full refund of all tuition and fees that he or she has paid toward the expenses of that academic term. If the notification of the call to active duty comes after the mid-term examinations or after other substantial graded work has been completed, the student will have the option of either taking a full refund of tuition and fees or taking an Incomplete in his or her courses with the privilege of returning to complete all required course work at some future date without payment of any further tuition and fee charges. It is the responsibility of the student to present evidence of his or her activation to the Office of Student Accounts and to request the appropriate refund.

Should a degree student called up for active duty find it necessary to interrupt active pursuit of the degree, he or she may petition the dean for a leave of absence for a specified period of time, generally limited to one calendar year. Deans are encouraged to grant any request to extend the leave of absence for longer than the customary period should military service require an absence of more than one year. All students on active duty will be automatically exempted from the request for a \$50 voluntary library contribution without requiring any communication from them or their initials on the bill.

### **Complete Withdrawal From the University**

A degree-seeking student who wishes to withdraw from all courses during a given semester must complete a Complete Withdrawal Form and submit it to the Office of the Registrar. Forms are available on line, at deans' offices, and in the Office of the Registrar. The deadline for complete withdrawal from all courses without academic penalty is the end of the ninth week of classes. Complete withdrawal after the ninth week requires a petition to the dean.

All charges for courses from which the student withdraws are subject to the refund policy listed under Fees and Financial Regulations in this Bulletin. Failure to complete a Complete Withdrawal Form can result in an extended financial obligation and the recording of grades of *F* (Failure) or notations of *Z* (Unauthorized Withdrawal).

The University is authorized to award the degree of Associate in General Studies under designated circumstances. This degree may be awarded to students in good standing who must leave GW after completing 60 credit hours in residence in a degree-granting GW school; students should consult the dean of their school about additional requirements for awarding of the Associate in General Studies.

### **University Policies and Definitions**



**University Policy on Equal Opportunity**—The George Washington University does not unlawfully discriminate against any person on the basis of race, color, religion, sex, national origin, age, disability, veteran status, sexual orientation, or gender identity or expression. This policy covers all programs, services, policies, and procedures of the University, including admission to educational programs and employment. The University is also subject to the District of Columbia Human Rights Law.

Inquiries concerning the application of this policy and federal laws and regulations regarding discrimination in education or employment programs and activities may be addressed to Susan B. Kaplan, Senior Counsel for Labor Relations and Compliance, The George Washington University, Washington, D.C. 20052, (202)994-4433, or to the Assistant Secretary for Civil Rights of the U.S. Department of Education.

**Academic Integrity**—The University community, in order to fulfill its purposes, must establish and maintain guidelines of academic behavior. All members of the community are expected to exhibit honesty and competence in their academic work. Incoming students have a special responsibility to acquaint themselves with, and make use of, all proper procedures for doing research, writing papers, and taking examinations. Members of the community will be presumed to be familiar with the proper academic procedures and held responsible for applying them. Deliberate failure to act in accordance with such procedures will be considered academic dishonesty. Acts of academic dishonesty are a legal, moral, and intellectual offense against the community and will be prosecuted through the proper University channels. The University Code of Academic Integrity can be found at <http://www.gwu.edu/~ntegrity/code.html>.

**Patent and Copyright Policies**—Students who produce creative works or make scientific discoveries while employed or supported by the University or through substantial use of

University resources are subject to the University's patent and copyright policies (see <http://www.gwu.edu/~research/policies.htm> under Intellectual Property).

**Human Research Requirements**—Students who are planning to conduct research involving the use of human subjects (for a thesis, dissertation, journal article, poster session, etc.) must obtain Institutional Review Board (IRB) approval before collecting any data. In order to receive this approval, contact the Office of Human Research (Ross Hall, Suite 712, 202-994-2715, or see [www.gwumc.edu/research/human.htm](http://www.gwumc.edu/research/human.htm)) to submit the study for the approval process.

**The Library**—All students registered in the University have the privilege of using the University's Gelman Library. Its stacks are open, and all students are welcome to browse. Authorized GW identification is needed to enter the library and to borrow books. Any book that circulates is subject to recall by the library if needed for reserve or requested by another user after a minimum of 20 days. Reserve books must be used in the library, except that they may be withdrawn for overnight use two hours before closing time. Transcripts of grades are withheld until a student's library record is clear, with all borrowed books returned and any fines paid. All students using the University's Gelman Library are expected to be familiar with its detailed regulations, available at any of the library's service desks.

**Use of Correct English**—A report regarding any student whose written or spoken English in any course is unsatisfactory may be sent by the instructor to the dean of the school, who may assign supplementary work, without academic credit, varying with the needs of the student. If the work prescribed is equivalent to a course, the regular tuition fee is charged. The granting of a degree may be delayed for failure to make up any such deficiency in English to the satisfaction of the dean.

**Name of Record**—A student's name of record includes the first name, middle initial or full middle name, and the family name. Nicknames may not be used. The University will change the name of a currently enrolled student on its official records but will require satisfactory evidence of a legal basis for the change. The diploma is awarded under the official name of record at the time of graduation.

**Student Status**—For the purpose of defining student status, undergraduates taking 12 or more credit hours per semester are considered to be full time, those taking 6 to 11 credits per semester are considered to be half time, and all others are considered to be part time. Generally, a student becomes a sophomore upon completion of 30 credits, a junior upon completion of 60 credits, and a senior upon completion of 90 credits.

**Attendance**—Students may attend only those classes for which they are officially registered. Regular attendance is expected. Students may be dropped from any course for undue absence. A student suspended for any cause may not attend classes during the period of suspension. Students are held responsible for all of the work of the courses in which they are registered, and all absences must be excused by the instructor before provision is made to make up the work missed.

**Credit**—Credit is given only after completion of registration in a course and satisfactory completion of the required work, or upon the assignment of advanced standing in accordance with the regulations of the school concerned. Credit that has been applied to the completion of a degree may not subsequently be applied to another degree.

**Auditing**—A person who has been admitted to the University may be registered, with the permission of the instructor, as an auditor in a class (no academic credit). An auditor is not required to take active part or to pass examinations. A student who takes a course as an auditor

may not repeat it later for credit. Tuition is charged at the prevailing rate. A student may not change from audit to credit status or vice versa after the end of the eighth week of classes.

**Earning Transfer Credit after Matriculation**—Students who plan to attend another institution and apply credit so earned toward graduation from this University must first secure the written approval of their dean. Up to 30 credit hours may be transferred through GW-approved study abroad at non-GW institutions. In addition, as a part of the University residence requirement, no more than 9 credit hours in total can be transferred from colleges or universities after matriculation except by special permission of the appropriate dean. No transfer from two-year institutions is allowed after a student has earned 60 credit hours toward a degree.

**Transcripts of Record**—Official transcripts of student records are issued upon written request of the student or former student who has paid all charges, including any student loan installments, due the University at the time of the request. A nominal fee is charged for each official transcript. Unofficial copies of transcripts are available to students, by written request, at a nominal fee. Partial transcripts are not issued. Students have access to their unofficial student record through the GWeb Information System.

**Student Conduct**—All students, upon enrolling and while attending The George Washington University, are subject to the provisions of the *Guide to Student Rights and Responsibilities*, which outlines student freedoms and responsibilities of conduct, including the Code of Student Conduct, and other policies and regulations as adopted and promulgated by appropriate University authorities. Copies of these documents may be obtained from the Office of the Dean of Students or from the offices of the academic deans. Sanctions for violation of these regulations may include permanent expulsion from the University. Regulations or requirements applicable only to a particular program, facility, or class of students may not be

published generally, but such regulations or requirements shall be published in a manner reasonably calculated to inform affected students.

**Right to Dismiss Students**—The right is reserved by the University to dismiss or exclude any student from the University, or from any class or classes, whenever, in the interest of the student or the University, the University Administration deems it advisable.

**Right to Change Rules and Programs**—The University reserves the right to modify or change requirements, rules, and fees. Such regulations shall go into force whenever the proper authorities may determine. The right is reserved by the University to make changes in programs without notice whenever circumstances warrant such changes.

**University Policy on the Release of Student Information**—The Family Educational Rights and Privacy Act (FERPA) applies to institutional policies governing access to and release of student education records.

The University may release the following directory information upon request: name, local address including e-mail, and telephone number; name and address of emergency contact; dates of attendance; school of enrollment; field of study; enrollment status; credit hours earned; degrees earned; honors received; participation in University-recognized organizations and activities (including intercollegiate athletics); and height, weight, and age of members of athletic teams, as well as likenesses used in University publications. A student who does not wish such directory information released must file written notice to this effect in the Office of the Registrar.

The University's full policy statement on the release of student information is published in the *Guide to Student Rights and Responsibilities*, available in the Office of the Dean of Students or the offices of the academic deans. The full statement also appears on the Registrar's Office website.

**Student Identification Number/Social Security Number**—The University has converted from use of the Social Security Number (SSN) to identify records pertaining to individual students, although the SSN is still needed to identify the student for purposes of financial aid eligibility and disbursement and repayment of financial aid and other debts payable to the University. The SSN is required when applying for financial aid. The Internal Revenue Service requires the University to file information that includes a student's SSN and other information such as the amount paid for qualified tuition, related expenses, and interest on educational loans. This information is used to help determine whether a student, or a person claiming a student as a dependent, may take credit or deduction to reduce federal and/or state income taxes. Many efforts are made to protect the privacy of this number, and a student may request an alternate personal identifier. Further information may be obtained by contacting the Office of the Registrar.

**Property Responsibility**—The University is not responsible for the loss of personal property. A Lost and Found Office is maintained on campus in the University Police Department.

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\*A full-time program is defined as 12–17 credit hours per semester. Undergraduates taking more than 17 credits per semester will be charged at the rate of 1 credit hour for each credit exceeding that limit. Undergraduates are not charged for an eighteenth credit if their program includes UW 20, nor are those in the School of Engineering and Applied Science charged for the eighteenth and nineteenth credits if required by their program.

The Schools

## **COLUMBIAN COLLEGE OF ARTS AND SCIENCES**

*Dean* P. Barratt

*Executive Associate Dean* R.J. Guenther

*Associate Deans* P.B. Duff, R.K. Packer, G.M. Schulz, T.G. Wallace

*Assistant Deans* K.Z. Keller, D. Cronin

Since its founding in 1821, Columbian College, the original college of liberal arts and sciences of The George Washington University, has been the cornerstone of the campus community.

Columbian College of Arts and Sciences today houses all undergraduate and graduate programs in the arts and sciences, offering bachelor's, master's, and doctoral degrees.

The rich and diverse arts and sciences curriculum is designed to strengthen the student's ability to analyze the social, cultural, and physical environment and to communicate findings in an articulate fashion. These purposes are accomplished by means of the study of various disciplines within the humanities, the social sciences, and the mathematical and natural sciences.

Students may elect one of 50 departmental or interdisciplinary majors; they may also elect double majors or individualized degree programs. Dean's Seminars constitute a set of courses available only to first-year Columbian College students; the seminars offer a focused introduction to issues of particular significance.

The College offers its undergraduates opportunities for pre-professional education in many fields and for internships in a stimulating urban environment. Special curricular guidance is given to students planning to apply to a medical or law school.

### **The Bachelor's Degrees**

Columbian College offers undergraduate programs leading to the degrees of Bachelor of Arts, Bachelor of Science, and Bachelor of Fine Arts. In cooperation with the School of Medicine and Health Sciences, a seven-year integrated Bachelor of Arts/Doctor of Medicine is offered.

One hundred twenty hours of academic course work must be passed and a grade-point average of at least 2.0 maintained. Note that some courses outside Columbian College (notably exercise and sport activities courses) do not count toward the 120-credit requirement. General curriculum, major, and other requirements described below must be met.

Each student must declare a major during the sophomore year. A student will normally declare a major in the third full-time semester but not later than the registration period during the fourth full-time semester or the semester following completion of 45 credit hours, whichever comes first. A student may change the major with the consent of the dean and of the department or committee concerned; the student must meet the requirements for the new major in effect at the time the change is approved. At least 60 hours of course work must be taken outside the major-field department or major program (this does not apply to the Bachelor of Fine Arts curriculum).

### **Residence**

Students must complete at least 60 of the total number of credit hours required for the degree at or through the University and must complete 45 of the final 60 hours in residence in the Columbian College, including at least 12 hours of course work at the 100 level in the major field. (Students who study abroad must complete 45 of their final 75 hours in residence. No more than 30 credit hours may be transferred through study abroad at institutions other than those affiliated with GW.) Nine of the final 15 hours must be completed in residence.



Students wishing to transfer from another division of the University into a degree program in Columbian College must have a cumulative grade-point average above 2.0 at the time of their last completed semester before transfer. Courses applicable to the degree taken while registered in any division of GW in the semester or summer sessions immediately prior to admission to degree candidacy in Columbian College are counted as courses in residence.

### **Advising**

Students have the responsibility for determining their schedules and meeting degree requirements. Because faculty and staff advisors can help students learn to make well-informed choices, freshmen who have not declared a major are required to meet with an advisor prior to registering each semester. A CCAS advising hold prevents registration until students who have not declared a major have consulted with their advisors.

Freshmen entering Columbian College participate in an advising system designed to provide ready access to a knowledgeable member of the faculty. All freshmen register for CCAS 10, Columbian College Advising; each section of the course is led by a faculty member who serves as the academic advisor until the student declares a major. The course is required for all new freshmen; it is graded Pass/No Pass.

Once students declare their major, they are advised by the faculty of their major department. Transfer students who have not yet declared their major are advised in the College's Office of Undergraduate Studies. Professional advisors are available year-round in the Office of Undergraduate Studies to discuss academic issues and for an accurate appraisal of procedural issues that may arise in any student's program of study. Specialized advising for students interested in health professions or law is also provided.

The Writing Center offers walk-in and by-appointment assistance. Personal counseling is available through the office of the Dean of Students, the Counseling Center, Disability Support Services, the Multicultural Student Services Office, and the International Services Office.

Students concerned about their academic performance should see their professors, their faculty advisor, or a professional advisor in the College's Office of Undergraduate Studies. First-year students who receive any grade of *C–* or lower in the first eight weeks must meet with their faculty advisor to review their academic progress.

### **Academic Standing**

A student who is not suspended or on probation is considered to be in good standing.

The following rules governing probation and suspension are applicable to students enrolled for a full-time program (12 credit hours or more) during the fall or spring semester. Students enrolled for fewer than 12 credits during the fall or spring semester and students enrolled during the summer sessions are subject to probation or suspension on the basis of their cumulative record, with a "semester" considered to be the time interval in which at least 12 credits have accrued.

**Probation**—A student whose cumulative grade-point average is below 2.0 but above 1.0 after attempting a minimum of 24 credit hours is placed on probation. The course load of a student on probation may be no more than 13 credit hours. A student returns to good standing if, after a first or second semester on probation, the cumulative grade-point average is raised to 2.0 or more.

**Suspension**—The following circumstances constitute grounds for suspension: (1) a cumulative grade-point average below 1.0 after attempting a minimum of 24 credit hours; (2) failure to attain a cumulative grade-point average of 2.0 or more after two successive full-time

semesters (or 24 additional credit hours attempted) on probation. Suspension will take effect at the end of the third consecutive semester immediately following two semesters on probation.

Once suspended, students may not register for or complete any courses in any division at The George Washington University. Suspended students may apply for readmission following completion of the term of suspension. Final dates for applying for readmission are the same as those governing undergraduate admission (see Admissions). A suspended student seeking readmission cannot apply for readmission until he or she has been away from GW for at least one semester. The student must submit evidence to the Committee on Undergraduate Studies of conduct during absence from the University that indicates that the student will profit from readmission. A student suspended twice for poor scholarship will not be readmitted.

**Semester Warning**—A student in the first freshman semester whose cumulative grade-point average is less than 2.0 will be issued a warning notice at the end of the semester and will be required to take corrective measures (e.g., limitation of course load to no more than 13 credit hours).

**Timely Progress Toward the Degree**—Students who fail to make adequate and timely progress toward the degree, through repeated leaves or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

**Dean's List**—The name of any student who completes 15 credit hours or more of graded course work in any one semester and attains a semester grade-point average that places the student in the highest 20% of CCAS students, with no grades below *B–* and no grade of Incomplete or Unauthorized Withdrawal (*Z*), will be placed on the Dean's List for that semester.

A course taken on a Pass/No Pass basis beyond the 15-hour minimum does not affect the student's eligibility for the Dean's List, nor are the credit hours of such a course computed in the above figures. However, a grade of No Pass in a credit-bearing course disqualifies the student from the Dean's List. Once established for a given semester, Dean's List eligibility is not recomputed.

### **General Curriculum Requirements**

With the exception of entering students in the College's School of Media and Public Affairs, all candidates for the degree of Bachelor of Arts or Bachelor of Science are admitted to a general arts and sciences curriculum until they declare a major field.

General curriculum requirements are established by the Arts and Sciences faculty as a whole and administered through its elected committees. Students must demonstrate that they have acquired familiarity with the breadth and diversity of the arts and sciences. Students will typically fulfill these requirements by taking the required number of GW courses in seven categories. Excluding the University Writing and Writing in the Discipline courses (see below), students may also fulfill these requirements in the following ways: (1) transfer credit for equivalent courses from an accredited institution; (2) credit earned by means of AP, IB, or other nationally approved examination programs; (3) waiver examinations such as SAT or ACT subject tests. (See Advanced Standing and Advanced Placement under Admissions in this Bulletin, and note that waiver exams do not satisfy the Foreign Languages and Cultures requirement.) The seven categories are listed below. Excluding courses taken to fulfill the Writing in the Discipline requirement under Literacy, no course may fulfill a requirement in more than one of the seven categories. The Office of Undergraduate Studies maintains a list of courses appropriate for freshmen.

1. *Literacy*—Students take University Writing 20 (4 credits) in their freshman year plus two courses designated as Writing in the Discipline (6 credits) before graduation, preferably in their sophomore or junior years. Students may not take two Writing in the Discipline courses in the same semester to fulfill this requirement.

2. *Quantitative and Logical Reasoning*—Students must take two courses (6 credits) from the fields of mathematics, logic, or statistics. (Two statistics courses or two mathematics courses that are related in subject matter may not be taken; see the notes preceding the course lists under Statistics and under Mathematics in the Courses of Instruction section of this Bulletin.)

3. *Natural Sciences*—Students must take three courses with laboratories (9–12 credits) in at least two of the following fields: biology (including biological anthropology), chemistry, geological sciences, and physics (including astronomy).

4. *Social and Behavioral Sciences*—Students must take two courses (6 credits) in one or more of the following fields: anthropology (except biological anthropology), communication, economics, geography, linguistics, media and public affairs, political science, psychology, speech and hearing science, and sociology (including human services).

5. *Creative and Performing Arts*—Students must take 3 credits in one of the following fields: fine arts, creative writing, dance performance, music performance (a single instrument or a single ensemble), and theatre performance.

6. *Humanities*—Students must take four courses (12 credits) in at least two of the following fields: American studies, classical studies, literatures in English, foreign literatures in their original language and in translation, history (including the history and appreciation of art, dance, music, film, and theatre), humanities, philosophy (except logic), religion, peace studies, and women's studies.

7. *Foreign Languages and Cultures*—Students must take two courses (6–8 credits) in one language other than English, beginning at the level at which they place, or students must take two courses (6–8 credits) in aspects of foreign, non-English speaking cultures from the fields of anthropology, art history, classical and Semitic languages and literatures, East Asian languages and literatures, German and Slavic languages and literatures, geography, history, humanities, international affairs, music, political science, religion, and women’s studies. For those who choose the foreign cultures option, courses must be selected from the following: Anth 170 to 175, 177 to 179, 185, 186, 188; Clas 81, 100, 101; Clas/Hist 107 to 110; Chin 111, 112, 162; Chin/WStu 136; Japn 111, 112, 162; Kor 111, 112, 162; EALL 75; EALL/Rel 182 to 186; AH 101, 102, 103, 104, 106, 120, 121, 131, 132, 134, 135, 160, 190, 191; Geog 154, 161, 164, 165; Ger 91, 92, 161, 162, 165; Slav 91, 92, 161, 162, 165, 166, 185, 186; Hist 104, 111, 116, 118, 132, 141 to 146, 148, 149, 158, 159, 161, 163, 164, 187 to 190, 193 to 196; Mus 7; PSc 130, 131, 166, 169, 170, 171, 173, 174, 176, 177, 179, 181, 183; Rel 106, 107, 112, 113, 115, 156 to 161, 163, 164, 165, 771; SpHr 81, 82. The Office of Undergraduate Studies periodically updates the list of approved courses.

### **The Major**

In order to declare a major, all students must receive academic guidance from a faculty advisor in the major department and submit a Declaration of Major form, signed by the major advisor, to the Office of Undergraduate Studies. The Declaration of Major form must be submitted no later than the registration period during the student’s fourth full-time semester or the semester following the completion of 45 credit hours (whichever comes first). No student is considered to have declared a major until this process is completed. Thereafter, the student receives academic guidance from a faculty advisor in the major department in order to register for all subsequent

semesters. In most cases, filing of the approved declaration form assures the student of admission to the major declared; however, if space, equipment, or other requirements compel a department or major program to limit the number of students in that major, admission to the major may be on a selective or space-available basis. Majors with selective admission are communication, journalism and mass communication, political communication, and English and creative writing.

A change in degree candidacy within Columbian College (e.g., from Bachelor of Arts to Bachelor of Science) requires the permission of the dean. The degree requirements effective at the time the change is approved must be met.

### **Major Fields**

All fields listed below (except biological anthropology, biophysics, and statistics) may lead to the Bachelor of Arts degree; a Bachelor of Science degree may be elected in those fields indicated by an asterisk.

American Studies

Anthropology

Archaeology

Art History

Art History and Fine Arts

\*Biological Anthropology

\*Biology

\*Biophysics

\*Chemistry

Chinese Language and Literature

Classical Studies

Communication

Criminal Justice

Dance

Dramatic Literature

Early Modern European Studies

\*Economics

English

English and Creative Writing

Environmental Studies

Fine Arts

French Language and Literature

Geography

\*Geological Sciences

German Language and Literature

Hispanic Languages and Literatures

History

Human Services

Japanese Language and Literature

Journalism and Mass Communication

Judaic Studies

\*Mathematics

Music

Philosophy



**\*Physics**

Political Communication

Political Science

Program in the Liberal Arts

Psychology

Religion

Russian Language and Literature

Sociology

Speech and Hearing Science

**\*Statistics**

Theatre

Women's Studies

**Scholarship Performance in the Major**

Majors are defined in terms of credit hours, required courses, and the attainment of grades no lower than *C–* in the minimum number of 100-level courses required in the major field. If a student receives a grade of *D+*, *D*, or *D–* in a 100-level course specifically required in the major, the major department or program may permit the course to satisfy a curricular requirement even though it will not count toward the minimum number of hours required for the major. However, the department or program may instead require the student to repeat the course until a satisfactory grade (*C–* or better) is earned. Once the student has completed the course with a satisfactory grade, credit hours earned the first time the course was taken will count toward the minimum number of hours required in the major. Credit earned for the repetition will not count toward the degree. The minimum specific requirements for majors are listed under the

department concerned in Courses of Instruction. The chair of the department, or designated departmental advisor, should be consulted before registration concerning the student's program of courses; the entire program, including electives, must be approved by the department. The student is also expected to consult a departmental advisor in all matters affecting the program of studies, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

### **Double Majors**

Students who complete the requirements of two majors in Columbian College (such as mathematics and physics or history and economics) may graduate with a double major. Consult with advisors in the two departments concerned before officially declaring both majors on the Declaration of Major form available in the Office of Undergraduate Studies.

A Columbian College student may pursue a second major in the Elliott School of International Affairs or the School of Engineering and Applied Science, provided that permission to do so has been obtained from the appropriate administrative office of the Elliott School or SEAS. Students in the Elliott School or SEAS may also take a second major (excluding majors in communication, journalism and mass communication, political communication, English and creative writing, and special interdisciplinary programs) in Columbian College.

Students wishing to pursue one of these options must request approval through the appropriate department and Columbian College's Office of Undergraduate Studies. In all cases, students must complete the major in their own school in order to graduate.

Double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

### **Interdisciplinary Programs**

*Special Interdisciplinary Programs*—A student may propose a special interdisciplinary major program, in consultation with appropriate academic advisors. The proposed program must have valid and clearly defined academic goals to be considered for approval. Only students with a *B* average or better are eligible to propose a special interdisciplinary program. The proposal must be submitted for approval by the end of the fourth semester or the semester following completion of 45 credit hours (whichever comes first).

Approval of the proposed program rests with the Committee on Undergraduate Studies, which must also approve the proposed name of the program and the composition of the committee that will oversee it. At least 45 credit hours of the program must be completed in Columbian College. Because of the broad scope of an interdisciplinary program, it may not be part of a double major.

At the discretion of the committee overseeing the program, the student must either write an acceptable senior thesis or pass a comprehensive examination in the last semester of study toward the degree. Students may apply for Special Honors by registering for CCAS 191. To be eligible, students must meet the requirements for Special Honors stated under University Regulations, must have a cumulative grade-point average of at least 3.5, and must receive a Pass With Distinction from all members of the major committee on the final project or thesis.

### **Minors and Secondary Fields**

Students who wish to familiarize themselves with a field outside their major may graduate with a minor in addition to the major. Not all Columbian College departments offer undergraduate minors; the requirements prescribed by those that do are listed under the department concerned.

A student interested in a minor should consult a faculty advisor in the department concerned and

declare both major and minor programs on the Declaration of Major form available in the Office of Undergraduate Studies.

At least one-half of the course work required for a minor must be done in residence. Grades of *C–* or better must be earned in 100-level courses, including such courses transferred as advanced standing from another institution. Courses passed with a grade below *C–* may be used to fulfill a minor field curricular requirement but may not be counted toward the total number of credit hours required for the minor.

When taken by a student enrolled at the University in a school other than Columbian College, such minors are referred to as secondary fields. The same curricular and scholarship requirements apply to secondary fields as to minors.

Minors are available in the following fields:

Africana Studies

American Studies

Applied Ethics

Archaeology

Art History

Art History and Fine Arts

Biological Anthropology

Biology

Chemistry

Chinese Language and Literature

Classical Studies

Communication

Creative Writing

Criminal Justice

Cross-Cultural Communication

Dance

Early Modern European Studies

Economics

English

Film Studies

Fine Arts

French Language and Literature

General Anthropology

Geographic Information Systems

Geography

Geological Sciences

German Language and Literature

Hispanic Languages and Literatures

History

Human Services

Italian Language and Literature

Japanese Language and Literature

Jazz Studies

Journalism and Mass Communication

Judaic Studies

Korean Language and Literature

Linguistics

Logic

Mathematics

Mind–Brain Studies

Music

Organizational Communication

Organizational Sciences

Peace Studies

Philosophy

Physics

Political Science

Psychology

Religion

Russian Language and Literature

Semitic Languages and Cultures

Sociocultural Anthropology

Sociology

Speech and Hearing Science

Statistics

Theatre

Women's Studies

Just as students enrolled at the University but outside the College may pursue Columbian College minors as secondary fields, such study is permitted Columbian College students in other schools of the University. Secondary fields are available in the School of Engineering and Applied Science, the School of Business, the School of Medicine and Health Sciences, the School of Public Health and Health Services, and the Elliott School of International Affairs. Columbian College students are limited in the number of hours they may take in courses outside the College (“professional credit” courses). Refer to Courses Outside Columbian College, below.

### **General CCAS Policies**

**Incompletes**—Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. In Columbian College, the conditions for granting a notation of *I* should be documented by a written contract between the faculty member and the student. Contracts must be on official Columbian College forms and a copy must be on file in the departmental office. A notation of Incomplete disqualifies the student for inclusion in the Dean’s List for the semester in which it is received.

*Changing an Incomplete*—Incomplete work must be completed as specified in the contract but no later than one calendar year from the last day of the examination period of the semester or summer session in which the symbol *I* was assigned. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the dean for additional time in which to complete the work of the course. Such petitions should be submitted within a year of the assignment of the symbol *I*. When work for the course is completed, the grade earned will be indicated in the form of *I*, followed by the grade. The indication of *I* cannot be removed from the transcript. An Incomplete that is not changed within this period automatically becomes an *IF*.

The symbol *I* cannot be changed by reregistering for the course here or by taking its equivalent elsewhere.

**Pass/No Pass Option**—A junior or senior student in Columbian College who is in good standing may, with the approval of the advisor and the dean, take one course a semester for a grade of *P*, Pass, or *NP*, No Pass. No student will be allowed to take more than four pass/no pass courses under this regulation. The student may, however, also receive grades of *P/NP* in proseminars for certain majors and in other courses in which these grades are assigned. Courses required for the College's general curriculum requirements or in the student's major or minor field (including those courses required for the major that are offered by other departments) may not be taken on the pass/no pass basis. A transfer student may not choose this option until the second semester of enrollment in this University. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of class.

**Preliminary Placement Examinations**—All foreign language departments require students to take placement tests to determine the level of proficiency or eligibility for languages studied in high school. The student is placed in an appropriate course on the basis of these tests. Students may not register for a course other than that determined by the placement test without written permission of the language department. There is no charge to the student for placement tests, and no credit (advanced standing) is awarded for courses bypassed or waived as a result of these tests.

Students who wish to register in Math 20, 31, or 51 are required, prior to registration, to take a placement examination or to have achieved indicated scores on the SAT subject test in mathematics.



**Earning Credit by Examination**—Assuming there is no duplication of course credit earned, a maximum of 24 credit hours may be assigned for any combination of the following:

*College Board Advanced Placement Tests*—See Admissions. Credit may be granted for college-level courses taken in an approved secondary school if substantiated by satisfactory performance on the Advanced Placement Tests.

*Special Departmental Examinations*—Some departments in Columbian College offer a special examination covering the subject matter of a specific course. The student must offer evidence of sufficient background to have a reasonable command of the subject matter. Departments reserve the right to deny such requests. Assigning credit by special departmental examinations will depend on the department's evaluation of the examination paper. These examinations will normally be of at least three hours' duration. A fee is charged for preparation, administration, and grading of each course examination. Credit by special departmental examination is not permitted for the first two years of college-level courses in a native language other than English. A student who has previously taken examinations to waive course requirements may not subsequently take examinations for credit in the same courses.

**Waiving Introductory Courses by Examination**—Some departments in Columbian College offer periodic waiver examinations for introductory courses. Such examinations may be attempted at the option of the student; a fee is charged. Specific departments should be consulted for further details. Passing a waiver examination does not entitle a student to any credit toward the degree.

**Courses Outside Columbian College**—No more than 18 credit hours of courses in schools of the University other than Columbian College may count toward the 120 credits required for graduation with a bachelor's degree in Columbian College. Pursuing a secondary field may

increase the 18-hour limit, with prior permission of the dean of Columbian College. No credit toward the degree is allowed for exercise and sport activities courses. No more than 45 credit hours of courses completed by a student while in nondegree status in the Office of University Students may be applied toward a degree in Columbian College.

*Naval Science*—For information on naval science courses and the Naval Reserve Officers Training Corps, see Naval Science, under Courses of Instruction.

**Academic Work Load**—To encourage academic performance of high quality, the College limits the student's work load. After the freshman year, a full-time student who is not on probation may take a course load of up to 19 credit hours. The 18th and all subsequent hours require additional tuition charges. A full-time student who, during the immediately preceding semester, has received no grades below *B–* and has earned grades of *A* or *A–* in three courses totaling at least 9 credit hours may take 21 credits. Students may not register for more than 21 credits without approval of the dean. Students registered for 12 to 15 credits should be employed for no more than 20 hours per week. The number of credits students on probation may take is determined by the Committee on Undergraduate Studies.

**Earning an Additional Hour of Credit**—In exceptional circumstances and with the prior approval in writing of the instructor and the dean, a student may register for and earn an additional hour of credit in certain appropriate 100-level courses within the College by doing a significant amount of extra work as assigned and supervised by the instructor.

### **Preparation for Medical School**

A student who plans to apply to medical school fulfills the general requirements of Columbian College stated above and may select any major in Columbian College. Advice about academic preparation for medical school is provided by the health professions advisor in the Office of

Undergraduate Studies. For admission to most medical schools, the student must have a minimum of 90 credit hours applicable toward a degree in an approved college of arts and sciences; the 90 hours must include:

*Biology*—8 credit hours, including laboratory. This may be either in general biology or zoology but may not include separately credited courses in botany.

*Chemistry*—8 credit hours of general inorganic chemistry (which may include qualitative analysis), including laboratory, and 8 credit hours of organic chemistry, including 2 hours of laboratory.

*Physics*—8 credit hours, including laboratory.

*English*—6 credit hours in the usual introductory English composition courses or their equivalents (fulfilled by the University Writing Program at GW).

Many medical schools have additional entrance requirements, which may include courses in biochemistry, genetics, and mathematics; even when such courses are not required, they are strongly recommended. With the exception of the specified requirements, applicants are urged to follow their personal interests in developing their course of study. A well-balanced program, rather than a specific field, is the criterion by which an applicant is judged.

**Seven-Year Integrated Bachelor of Arts/Doctor of Medicine**—In addition to the early selection program described under the School of Medicine and Health Sciences, a seven-year integrated B.A./M.D. program has been designed for students of high ability and maturity who have decided, before applying to college, that they wish to become physicians and want to accomplish that goal in a shorter amount of time. Detailed information on this program is available through the College.

### **Preparation for Law School**

Because a broad liberal education is the best undergraduate preparation for law school, Columbian College does not prescribe a prelegal curriculum. Advice about academic preparation for law school is provided by the pre-law advisor in the Office of Undergraduate Studies.

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## **SCHOOL OF BUSINESS**

*Dean S. Phillips*

*Senior Associate Dean P.A. Rau*

*Associate Deans M. Tarimcilar, L.G. Singleton, K.R. Kumar*

Organized as the School of Government in 1928, the School of Business has been responsible for over half a century for the professional development of individuals assuming leadership roles in society. The School comprises nine departments—Accountancy, Decision Sciences, Finance, Information Systems and Technology Management, International Business, Management, Marketing, Strategic Management and Public Policy, and Tourism and Hospitality Management. The use of a multidisciplinary approach in educational programming helps prepare both the generalist and specialist for professional careers in today's complex, organizational society.

The School of Business is a member of AACSB International—The Association to Advance Collegiate Schools of Business, and its undergraduate and graduate programs are accredited by the Association.

*Vision*—To be a preeminent business school recognized for scholarly research, teaching excellence, and innovative curricula focused on the responsible management of organizations in the global environment.

*Mission*—To deliver an outstanding education, advance knowledge, and provide practical experience in diverse organizational settings, leveraging the unique advantages of our location in

the Washington, D.C., area, in order to enhance the capacities of students, faculty, staff, alumni, and the business community to be productive and principled members of society.

*Values*—Integrity: demanding transparency, accountability, and ethical behavior; leadership: encouraging problem solving, commitment, and entrepreneurship; scholarship: emphasizing discovery, learning, and innovation; service: responding to the needs of students, academic professions, and the community; relationships: fostering communication, collaboration, and collegiality.

### **The Bachelor's Degrees**

The School offers programs leading to the degrees of Bachelor of Accountancy and Bachelor of Business Administration. The programs include foundation knowledge for business in accounting, behavioral science, economics, mathematics, and statistics. Curricula are designed to provide perspectives on ethical and global issues, the influence of political, social, legal and regulatory, environmental, and technological issues, and the impact of demographic diversity on organizations. A Bachelor of Business Administration student selects a field of concentration from among business economics and public policy; finance; information systems; international business; marketing; sport, event, and hospitality management; or, with faculty approval, may structure an individualized field of concentration reflecting a specific interests in management.

### **Residence**

Of the 120 credit hours required for graduation, at least 60 credits must be completed at GW and at least 30 credits, including 27 credits in required business or accountancy courses, must be completed while registered in the School of Business. This requirement applies to students transferring within the University as well as to students transferring from other institutions. Unless special permission is granted by the director of the Advising Center to pursue work

elsewhere, the work of the senior or final year must be completed in the School of Business.

Students who have successfully completed 60 credit hours at GW may not take courses at a community college. Excluding study abroad, students matriculated at GW may have a maximum of 9 credit hours transferred into the B.B.A. or B.Accy. program.

### **Assignment of Credit for Transfer Students**

Certain business courses taken at a two-year college (one per area up to a maximum of three courses) comparable to this School's courses numbered 101–200 may be accepted for credit only after BAdm 197 is successfully completed with a grade of *C* or better in the senior year.

An international student who is required to take the English for Academic Purposes writing course (EAP 15) will be required to complete the course successfully, and assignment of credit for any previously completed courses at another institution will be held pending completion of this requirement.

Students wishing to transfer from another division of the University must have a cumulative grade-point average of 2.8 or above at the time of transfer. Quantitative courses will also be reviewed.

### **Scholarship Requirements**

A student must have the following to graduate: (1) a minimum of 120 credit hours; (2) an overall grade-point average of at least 2.0; and (3) a grade-point average of at least 2.0 in all required 100-level B.B.A. or B.Accy. courses and concentration-related courses (the major field grade-point average). All courses taken at GW are included in the overall grade-point average calculation. Elective courses in or out of the School of Business cannot be used as substitutes for required courses in the calculation of the major field grade-point average.

**Probation**—A student whose grade-point average (either overall or in the major field) falls below 2.0 after completing a minimum of 12 credit hours will be placed on probation. Probation by overall grade-point average normally extends over the period in which the student attempts another 12 credit hours, which may include remedial studies as prescribed. In those cases in which a student chooses to take a lighter load during the probationary semester, performance will be reviewed at the end of the semester and the student may be suspended at that time. Incompletes are not allowed during the probation period. Probation by major field normally extends over the period in which the student attempts 6 credit hours in major field course work.

**Suspension**—A student whose grade-point average (either overall or in the major field) is 1.5 or below in any semester or remains below 2.0 at the end of the probationary period will be suspended. Any outstanding Incomplete at the time of suspension must be completed or will become an administrative *F*, affecting the GPA. A student suspended for poor scholarship may apply for readmission after the end of the fall or spring semester following the term of suspension. To be considered for readmission, the student must submit acceptable evidence of remedial activity performed during the suspension period and of renewed potential ability to do college-level work. No advanced standing will be assigned for academic work completed while the student is suspended, but the student may petition the director of the Advising Center for consideration of advanced standing after completing a minimum of 12 credit hours of course work here and achieving a cumulative and major field GPA of at least 2.0.

A student readmitted after suspension is on probation and must maintain a current grade-point average determined by the director of the Advising Center until the cumulative and major field grade-point averages are at least 2.0. In no case will the overall probationary period after

readmission exceed 24 credit hours or the major field probationary period exceed 12 credit hours. A student suspended twice for poor scholarship will not be readmitted.

**Mid-Semester Warning**—If a professor files an evaluation showing that a student is doing unsatisfactory work (*C–* or below), the director of the Advising Center will inform the student in writing of his or her status. This notice constitutes an official direction to consult with the professor and advisor immediately.

**Semester Warning**—Any student whose overall or major grade-point average falls between 2.0 and 2.2 will be placed on warning. Though the student's courses will not be restricted, progress during the semester will be monitored. It is the student's responsibility to meet with an assigned advisor during the semester.

### **General School of Business Policies**

**Academic Work Load**—Full-time students in good standing (2.0 overall grade-point average or higher) may register for a maximum of 17 credit hours each semester and 6 credits each summer session. A student employed more than 20 hours a week, who is in good standing, may not take more than 9 credits each semester and 3 credits each summer session. A full-time student on probation may take no more than 13 credit hours of course work; it is strongly recommended that a student on probation not be employed. Full-time students whose overall grade-point average is 3.0 or higher may take up to 18 credits each semester. A student employed more than 20 hours a week, whose grade-point average is 3.0 or higher, may take up to 12 credits.

**Pass/No Pass Option**—A junior or senior student who has a cumulative grade-point average of 2.5 or better may, with the approval of the advisor and the director of the Advising Center, take one upper-level non-business or unrestricted elective a semester and receive a grade of *P*,



Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the grade-point average. No student will be allowed to take more than four pass/no pass courses, with a limit of one per semester. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the last date to withdraw from a course (except in the case of exercise and sport activity or applied music courses). Required courses may not be taken on the pass/no pass basis, with the exception of BAdm 1. A transfer student may not choose this option until the second semester of enrollment in the University.

**Incompletes**—Conditions under which the notation of *I* (Incomplete) is assigned are described under University Regulations. The *I* must be changed by a date agreed on by the instructor and the student but no later than the last day of the examination period for the fall or spring semester immediately following the semester or summer session in which the *I* is assigned. An Incomplete that is not changed within this period automatically becomes an *IF*. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the director of the Advising Center for additional time in which to complete the work of the course. Such petitions should be submitted within the same period. The *I* cannot be changed by reregistering for the course here or by taking its equivalent elsewhere. The *I* notation remains on the student's permanent record even after the course has been successfully completed.

**Dean's Honor List**—The names of students who achieve a grade-point average of 3.75 or higher are placed on the Dean's Honor List for that semester. Appearance on the list is limited to (1) full-time students registered for a minimum of 12 credit hours (provided that the 12 credits are taken for a grade) and (2) part-time students registered for a minimum of 12 credit hours over a period of two consecutive semesters, which may include a summer term.

**Independent Research Plan**—A junior or senior of demonstrated capacity, with a special interest in the subject matter of a course, may be permitted to undertake study under the personal direction of a regular, full-time member of the faculty, in accordance with the rules of the appropriate department. Credit under this plan is limited to the specific credit hours normally allowed when a course is taken on a class basis. A petition outlining the student's specific study plan must be submitted to the director of the Advising Center prior to beginning any independent study. Generally, a maximum of two independent studies in two separate semesters is permitted.

**Secondary Fields of Study**—A secondary field of study in business administration is available in the School of Business. School of Business students may pursue a secondary field in other GW schools.

**Students from Other Schools Within the University**—Degree candidates from other schools of the University cannot register for more than 21 credits in courses from the B.B.A. program. Typically, a maximum of 6 credits is permitted in courses from the B.Accy. program, unless an advisor recommends an additional 3 credits.

## **The Bachelor of Accountancy and The Bachelor of Business Administration**

### **Curriculum for the First Two Years for All B.Accy. and B.B.A. Students**

*Freshman Year*—BAdm 1–2, 66; UW 20; Econ 11–12; Math 51–52; a two-course sequence chosen from Astr 1–2, BiSc 5–6 or 11–12, Chem 3–4 or 11–12, Geol 1–2, Phys 11–12; two approved foreign language and culture courses chosen in consultation with the advisor.

*Sophomore Year*—Accy 51, 52; BAdm 53, 59, 64, 76; Stat 51 or 53; PSc 1, 2, or 3; one approved 3-credit humanities elective; one approved 3-credit elective taken outside the School of Business.

**Note:** CSci 10, 35, Math 7, 9, 10, 20 (without 21), and ExSA courses may not be used for credit toward the B.Accy. or the B.B.A. For B.Accy. students, a minimum grade-point average of 2.5 is required at the start of the junior year. For B.B.A. students, the concentration must be selected no later than the second semester of the sophomore year.

### **Curriculum for the Second Two Years for All B.Accy. Students**

*Junior Year*—Accy 121, 122, 151, 161, 192; BAdm 110, 115, 122; three approved 3-credit electives.

*Senior Year*—Accy 152, 171, 181, 193, 196; BAdm 150, 197 (BAdm 197 must be taken at GW); three approved 3-credit 100-level electives, two of which must be outside of the School of Business.

Students who intend to take the C.P.A. examination should be aware that the course work required for admission to the examination varies from state to state. Students are advised to consult the Board of Accountancy for the state in which they plan to take the examination and choose courses that meet that state's requirements.

### **Curriculum for the Second Two Years for All B.B.A. Students**

*Junior Year*—BAdm 110, 115, 120, 122, 130, 150; Stat 112 or 118; two courses in the concentration; two 3-credit 100-level electives chosen in consultation with the advisor.

*Senior Year*—BAdm 155, 197 (BAdm 197 must be taken at GW); three courses in the concentration and one related elective; four 3-credit 100-level electives chosen in consultation with the advisor (two non-business, two unrestricted).

#### *Concentrations*

The concentration consists of five courses plus a related elective chosen from a set of courses designated by the department. The concentration must be selected no later than the second

semester of the sophomore year; the student should contact the Advising Center to declare a concentration. Students may declare two concentrations, but they should note that this will increase the number of credit hours required to complete the B.B.A. Concentrations are listed below, with the courses that constitute them. In all cases, students must consult the academic advisor for an appropriate related elective.

*Business Economics and Public Policy*—Econ 101 and 102 or 158; PSc 116 or 118; PSc/PAd 117 or PSc 104; and, with approval of the advisor, a course chosen from Anth 150, Econ 136 or 181, Geog 120, PubH 180, or PSc 122.

*Finance*—Fina 124,, 125, 126, 127, and 132.

*Information Systems*—ISTM 119, 120,, 121, and two additional courses selected from 123, 190, and 243.

*International Business*—IBus 160 and four additional 100-level IBus courses.

*Marketing*—Mktg 142, 143, 148, 150, and 159.

*Sport, Event, and Hospitality Management*—event management: TStd 104, 135 or 143, 145, 190, and 113 or 114; hospitality management: TStd 104, 143, 144, 145, and 113 or 114; sport management: TStd 104, 135, 136, 137, and 113 or 114.

*Individualized Concentration*—A student with a minimum GPA of 2.8 and a specific interest in some area of management may design an individualized concentration drawing on courses across the University. Past examples of approved individualized concentrations include emergency response management, media management, and performing arts management. Such a concentration consists of four courses plus tools electives, and a related elective selected with the guidance of faculty with expertise in the area of interest. All such individualized concentrations

must be approved in advance through an individualized concentration review committee.

Interested students should discuss their ideas with an advisor.

### **Five-Year Joint Programs Leading to a B.B.A. and a Master's Degree**

The School of Business offers five-year joint programs leading to both a B.B.A. and a master's degree. Students pursue the regular B.B.A. curriculum in their first three years of study and are enrolled in courses at both the undergraduate and graduate levels during the final two years.

Students can apply for admission to the graduate program when they apply for admission to the University (they must meet specified GPA and other requirements to remain in the program), or they may apply after earning 75 credits. During the last two years, the student simultaneously completes requirements for the undergraduate and the graduate degree but is not considered a graduate student until the start of the fifth year of study. The two degrees are awarded concurrently; there are no exceptions. Students who choose to discontinue the program at the end of four years will be required to take additional courses to complete requirements for the B.B.A. A full description of the programs, including admission requirements, can be obtained through the Advising Center.

### **Bachelor of Business Administration/Master of Science in Information Systems Technology**

Application to the B.B.A./M.S.I.S.T. program requires a minimum 3.2 GPA. Students take ISTM 119 and 120 among the third-year electives.

*Fourth Year*—BAdm 155, 197; two approved 100-level non-business electives; one 3-credit unrestricted elective; ISTM 121, 201, 202, 203, 204.

*Fifth Year*—ISTM 205, 206, 207, 210; three electives chosen from ISTM 211 through 225.

### **Bachelor of Business Administration/Master of Tourism Administration**

Students in the B.B.A./M.T.A. program take TStd 104 and 143 or 137 among the third-year electives. Students are required to gain at least 500 hours of work experience in the tourism, hospitality, sport, event, or related field if they do not have equivalent previous experience.

*Fourth Year*—BAdm 155, 197; TStd 144 or 135, 145 or 136, 249, 270; two approved 100-level nonbusiness electives; one 3-credit unrestricted elective; and two approved graduate-level electives.

*Fifth Year*—12 credit hours in one of the following concentration fields: sustainable destination management, event and meeting management, sport management, or the individualized study option; plus 9 credit hours in approved electives and either TStd 283 and 297 or TStd 299 and 300.

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## **SCHOOL OF ENGINEERING AND APPLIED SCIENCE**

*Dean* D.S. Dolling

*Associate Deans* M. Pardavi-Horvath, B. Narahari, C.E. Korman

*Assistant Deans* B. Myklebust, R. Cosentino

The School of Engineering and Applied Science was organized in 1884 as the Corcoran Scientific School of Columbian University, named in honor of William W. Corcoran, president of the University's Board of Trustees from 1869 to 1888. The school was among the first to accept women for degree candidacy in engineering. While the organization and offerings of the school have evolved over the years, through most of its history its programs have been characterized by an emphasis on principles guiding the advancement of technology.

Through its five departments—Civil and Environmental Engineering, Computer Science, Electrical and Computer Engineering, Engineering Management and Systems Engineering, and

Mechanical and Aerospace Engineering—the School of Engineering and Applied Science offers undergraduate programs leading to the Bachelor of Science (in biomedical engineering, civil engineering, computer engineering, computer science, electrical engineering, mechanical engineering, and systems engineering) and the Bachelor of Arts (in applied science and technology and in computer science). Selected five-year bachelor's/master's degree programs are available. In cooperation with the GW Law School, an integrated engineering and law program leading to the B.S. or B.A. and J.D. is offered.

The School offers graduate study leading to the degrees of Master of Science and Doctor of Philosophy and to the professional degrees of Engineer and Applied Scientist. Several graduate certificate programs are offered as well.

Extensive and varied laboratories and computing facilities support the undergraduate programs. The School strongly supports co-curricular activities to broaden and deepen its students' overall educational programs, including an extensive array of internship opportunities at government laboratories and private companies, both in the Washington area and elsewhere. Other opportunities are engineering-type team competitions, research projects, and the SEAS student government organization, the Engineers' Council.

### **Residence**

Sixty credit hours must be completed in residence. Full-time students normally complete their programs in four years.

### **SEAS Regulations**

**Advising**—Every entering undergraduate student is assigned a faculty advisor to assist in orientation in the professional discipline. Faculty advisors counsel students on their programs of study, achievement and maintenance of satisfactory scholastic performance, professional

development, and extracurricular activity as part of the educational process. The advisor represents the student in all cases requiring faculty action. Students must obtain their advisor's approval of their program of study prior to registration for each academic semester and summer session. The advisor's approval must be obtained before registering for a course at another institution. Until the work required for the degree is completed, students must consult with their advisors in all academic matters. However, an advisor may not deny entry into any course or activity to which the student is entitled under the regulations of the School.

**Assignment of Transfer Credit**—Transfer students should complete a Transfer of Credit worksheet, available in the SEAS Office of Undergraduate Student Services, Advising, and Records and present the worksheet to the faculty advisor for approval. See Admissions in this Bulletin for more detail on residence and transfer credit policies.

**Credit by Examination**—See Admissions in this Bulletin for information on credit assignment for College Board Advanced Placement Tests.

Registered SEAS students may take examinations in some academic departments for waiver of or credit for a specific course upon approval of the appropriate department chair; before the test is administered, the student must have demonstrated sufficient preparation to warrant being given the test. An examination for credit is not allowed if an examination for waiver has been successfully completed.

**Makeup of Credit for Waived Courses**—Waiver of a required course requires approval of the student's faculty advisor and department chair. If a course required by the SEAS curriculum is waived, the corresponding credit hours must be earned by satisfactory completion of a university-level academic course, either technical or nontechnical, approved by the student's faculty advisor. Only if the substituted course would normally be considered part of the student's



curriculum will the grade earned be used in determining grade-point average, Dean's List, probation, and suspension.

**Scholarship Requirements**—To be eligible for graduation a student must have at least (1) an overall grade-point average of 2.0, (2) an overall GPA of 2.0 for the program taken at SEAS, and (3) a GPA of 2.2 for technical courses required in the fifth through eighth semesters. All computer science courses taken in the Bachelor of Arts major in computer science are considered technical for this purpose. Grades used to calculate the grade-point average include all grades earned at GW and through the Consortium while the student is enrolled at GW. (In determining probation, suspension, or Dean's List status, the grades used are for academic courses taken in fulfillment of degree requirements and not for remedial courses or those taken to make up deficiencies. For example, EAP courses and non-SEAS courses taken in excess of the number needed to fulfill degree requirements are not considered.)

**Probation**—Full-time students are placed on probation if their grade-point average is below 2.0 for one semester or if they receive more than one grade of *F* in one semester or summer session. Part-time students are placed on probation if their GPA is below 2.0 or they have received more than one grade of *F* after accumulating 12 credit hours; a new grading period is considered to begin once this accumulation is reached. Students on probation who earn a GPA of at least 2.0 (for 12 or more credit hours) during the semester on probation but also receive a grade of *F* are continued on probation; students in this category who receive two or more *F*s are suspended.

Full-time students are removed from probation when the GPA is at least 2.0 with no grade of *F* during the semester on probation. Part-time students are removed from probation when the

GPA is at least 2.0 and they receive no grade of *F* for the next 12 credit hours after being placed on probation.

**Suspension**—The following circumstances constitute grounds for suspension: (1) two grades of *F* any time during a probation period (part-time students who receive two grades of *F* while on probation will be suspended at the time of receipt of the second *F*); (2) four grades of *F* in any semester (or the equivalent for part-time students); (3) placement on probation for a third time; (4) a cumulative grade-point average of (a) 1.5 or below at the end of the sophomore year or upon completion of the 63rd credit in the student's curriculum, (b) 1.9 or below at the end of the junior year or upon completion of the 97th credit in the student's curriculum, or (c) below 2.0 at any time during the senior year.

Department faculty may designate additional courses to be taken and specify grades to be received by students who fail to meet but come close to meeting the graduation requirements; suspension may be held in abeyance for a stated period in this circumstance.

Students readmitted on probation will be suspended if they do not attain a minimum GPA of 2.0 during their first semester (12 or more credit hours) or if they receive more than one grade of *F* during the period.

Once suspended, a student may not have that suspension rescinded by a grade change at a later date. The student may, however, apply for readmission noting the grade change. Students who have been suspended may not apply for readmission until one year after the suspension. To be considered for readmission, a student must have undertaken academic work at another institution, primarily in mathematics, science, or engineering, during the year of suspension and earned a GPA of at least 2.7.

**Dean's Honors and Commendation Lists**—The names of all students who, in a given semester, take 12 or more graded credit hours in course work that applies to graduation requirements (or in any additional SEAS courses taken) may appear on the Dean's Honors List if a grade-point average of 3.5 is achieved or on the Dean's Commendation List if a GPA of 3.0 is achieved. No disciplinary action may have been taken against the student, and no more than one grade below *B–* and no grades below *C–* may have been earned. A student who receives a notation of *I* (Incomplete) during a semester will not be placed on the Dean's Honors or Commendation List for that semester unless the *I* is changed to *I* followed by a letter grade within 30 days of the end of the marking period and the student continues to meet all the requirements for the Dean's Honors or Commendation List.

**Incompletes**—Conditions under which the notation of *I* (Incomplete) may be assigned are described under University Regulations. If the *I* is not changed to *I* followed by a letter grade within 30 days, decisions on probation, removal from probation, and suspension will be made with the information on hand, in conformance with SEAS regulations. Although the *I* may remain on the record for a maximum of one year, the instructor should normally set a much briefer period within which the uncompleted work (usually the final examination or required paper) must be made up. The *I* cannot be removed by the student's reregistering for the course here or taking its equivalent elsewhere. An *I* that is not removed after one calendar year or at the time of graduation of the student, whichever occurs first, will be changed on the permanent record to a grade of *IF*. When the *I* is changed to a letter grade, the *I* followed by the letter grade (e.g., *IB*) will appear on the student's record. The grade for which the *I* is changed will be applied to the grade report for the semester or summer session during which the change is made.

for the purposes of determining probation, suspension, grade-point average, and Dean's and other honor lists.

**Pass/No Pass Grading System**—SEAS students may not take courses required for graduation on the pass/no pass (*P/NP*) grading system. They may, however, take courses outside their regular SEAS academic program under this grading system.

**Academic Work Load**—A full-time undergraduate student who is not on probation may register for no more than 21 credit hours. Students on probation may not register for more than 13 credit hours. A student employed more than 24 hours a week may take no more than 10 credit hours. In exceptional cases these limits may be exceeded with the faculty advisor's permission.

**Humanities and Social Sciences Electives**—With the assistance of the advisor, each student in a SEAS B.S. program chooses a set of elective courses in the humanities and social sciences. For most B.S. curricula, these normally consist of a minimum of 18 credit hours, divided equally between the humanities and social sciences. Each 9-credit group must include two courses in one subject area and a third course in a different subject area. When a foreign language is taken as part of the humanities requirement, the following rules apply: (1) the foreign language studied must not be a native language of the student, unless the courses taken are literature courses; (2) if the student has studied the language previously, he or she must first take a placement test given by the language department concerned and enroll in a course recommended by that department; and (3) the student may use at most two foreign language courses to satisfy SEAS's humanities requirements. If two courses are used, they must be in the same foreign language. The advisor must approve the program.

Since the SEAS curricula are, by necessity, oriented toward technical subjects, the humanities and social sciences electives should be courses that broaden the student's outlook.

Courses in areas such as anthropology, economics, foreign languages, geography, history, literature, philosophy, political science, psychology, and sociology are considered appropriate.

### **Mission Statements and Educational Objectives**

#### **Department of Civil and Environmental Engineering**

*Mission Statement*—The mission of the Department of Civil and Environmental engineering is to provide an academic environment where professional education can be pursued, scholarly research in science and technology can be conducted, and the interest of the public can be served through the advancement of knowledge.

In pursuit of this mission the administration, faculty, and staff join to provide a broad based, rigorous professional education in civil engineering at the undergraduate level, provide graduate education at the master's level in major areas of civil engineering, provide doctoral programs in selective areas of excellence within civil engineering, and serve the local community, citizens of the nation, and the people of the world.

*Educational Objectives*—The civil engineering undergraduate program of study prepares its graduates with the following career and professional accomplishments. Technical knowledge: students are enabled to use their technical knowledge and expertise in mathematics, science, and engineering to identify, formulate, and solve problems involving design, experimentation, and analysis of a wide variety of civil engineering applications. Team skills: students develop leadership skills, demonstrate proficiency in all forms of communication, and perform well in a multidisciplinary team environment. Continuous education: students recognize the need for continuing their education through graduate studies, continuous education opportunities, and/or self-education. Professionalism: students are prepared to exercise the highest standards of personal and professional integrity, demonstrate an understanding of the ethical and professional

issues related to the procurement of work, and provide coordination between the design and construction aspects of the civil engineering profession.

These objectives are accomplished through a rigorous curriculum that emphasizes fundamentals in basic sciences, mathematics, humanities, and engineering in five major areas of civil engineering: environmental engineering, geotechnical engineering, structural engineering, water resources engineering, and transportation engineering. The curriculum enables students to use modern engineering tools to work both individually and in teams. The curriculum contains a well-structured set of courses that enable students to develop the required analytical, experimental, and design skills.

*Educational Outcomes*—The civil engineering undergraduate program of study prepares its graduates with the following career and professional accomplishments: an ability to apply knowledge of mathematics, science, and engineering; design and conduct experiments and analyze and interpret data; design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, health and safety, manufacturability, and sustainability constraints; identify, formulate, and solve engineering problems; use the techniques, skills, and modern engineering tools necessary for engineering practice; function on multidisciplinary teams; and communicate effectively. Students are provided with the broad education necessary to understand the impact of engineering solutions in a global economic, environmental, and social context; a knowledge of contemporary issues; an understanding of professional and ethical responsibility; and a recognition of the need for and ability to engage in lifelong learning.

The civil engineering undergraduate program curriculum includes coverage of proficiency in mathematics through differential equations, probability and statistics, calculus-based physics,

and general chemistry; proficiency in a minimum of four recognized major civil engineering areas; the ability to conduct laboratory experiments and to critically analyze and interpret data in more than one of the recognized major civil engineering areas; the ability to perform civil engineering design by means of design experiences integrated throughout the professional component of the curriculum; and an understanding of professional practice issues such as procurement of work, bidding versus quality-based selection processes, how the design professionals and the construction professions interact to construct a project, the importance of professional licensure and continuing education, and/or other professional practice issues.

### **Department of Computer Science**

*Mission Statement*—The mission of the Department of Computer Science is to serve the global community by providing high-quality computer science education, research, and professional service and to advance computer technology in areas of selective excellence.

*Educational Objectives*—The program has been developed to prepare graduates who, in the years following graduation, will earn an advanced degree in computer science or related disciplines or a professional degree (such as law, business, medicine), or be thriving IT or computing professionals or entrepreneurs with the ability to apply skills and knowledge learned while an undergraduate at GW, and who will conduct themselves professionally and ethically, work effectively in teams, and communicate effectively to both technical and non-technical audiences.

*Educational Outcomes*—By the time of graduation, a computer science student will have: (1) learned to apply principles from the fundamentals of computer science, including discrete structures, data structures, algorithms, and the theory of computing; (2) acquired an understanding of the hardware and software architecture of computer systems, including

architecture, operating systems, databases, languages, and networks; (3) acquired an understanding of the overall social and professional context in which computing activities take place and of ethical professional conduct, and participated effectively in team projects; (4) demonstrated an application of software engineering principles through completion of a capstone project requiring specification, design, and implementation; (5) conveyed technical knowledge in an effective manner through written and oral communications; and (6) acquired an understanding of advanced material in at least one area of computer science.

### **Department of Electrical and Computer Engineering**

*Mission Statement*—The mission of the Department of Electrical and Computer Engineering is to motivate and inspire our students by providing high-caliber, fully integrated programs in electrical, computer, and biomedical engineering in order to provide leadership in a rapidly evolving global information society in the service of humanity and to advance the state of knowledge in our disciplines by actively pursuing scholarly research for publication and dissemination.

*Educational Objectives*—The objectives of the programs are to educate students in the principles of engineering, including cognizance of their responsibilities as members of society. The engineering education is based on the sciences and the principles of design. Social responsibilities are instilled through a balanced program in the humanities and social sciences as well as coverage of specific topics in professional ethics and social responsibilities. The programs provide students with a solid foundation in electrical, computer, and biomedical engineering through a balanced curriculum integrating the underlying scientific and mathematical knowledge with the latest technological developments. The curriculum is designed to produce engineers capable of functioning in the present technological environment and of



adapting to future directions of the profession. Specifically, the programs aim to teach students how to analyze and implement complex interdisciplinary engineering projects; to give students a strong foundation for graduate studies in their field; to prepare students for competitive and challenging industrial applications; to teach students how to use state-of-the-art computer tools for solving engineering problems; to expose students to hands-on engineering experience through laboratory courses; to cultivate students' abilities to communicate and work effectively in teams; and to help students develop an understanding of the ethical issues and global perspectives arising in the practice of the engineering profession.

### **Department of Mechanical and Aerospace Engineering**

*Mission Statement*—The mission of the Department of Mechanical and Aerospace Engineering is to educate students to become professional mechanical and aerospace engineers who are confident in their understanding of science and technology, who are creative in the face of new challenges, and whose analytical skill and thirst for lifelong learning will open new career horizons; to contribute to society through the conduct of relevant research at the forefront of mechanical and aerospace engineering knowledge and to provide opportunities for students to participate and learn through mentorship with the faculty; and to serve the nation, the community, and the university.

*Educational Objectives*—The mechanical engineering program provides an integrated curriculum aimed at producing graduates who develop successful careers in mechanical engineering practice or in science and technology. Graduates will be prepared to accomplish the following within a few years after graduation: (1) practice mechanical engineering in industry or government, applying knowledge and skills acquired in the program to the design of engineering systems and devices and the analysis and solution of engineering problems of complex scope;

and/or (2) be successful in advanced education, research and development, or other creative efforts in engineering, science, and technology; and/or (3) apply engineering skills while pursuing careers in other professions, such as law, medicine, business, or public policy (this objective is included to reflect the program's patent law and medical preparation options and will apply to a selected group of graduates of the program); (4) conduct themselves in a responsible and ethical manner, cognizant of the social, environmental, and economic impact of engineering and technology on society; (5) embark upon a process of lifelong learning in their profession; and (6) enter into leadership roles in technological development or local, national, or global economic development.

### **Bachelor of Science Degree Programs**

Check with the department concerned for total credit requirements for the degree programs that follow.

The listed curriculums on the following pages all assume electives to be at least 3 credit hours. Credit toward the degree is not allowed for exercise and sport activities courses. The key to abbreviations for course designations can be found at the beginning of the Courses of Instruction section.

### **Biomedical Engineering**

Offered by the Department of Electrical and Computer Engineering, this innovative program provides a strong foundation in the basic sciences as well as the theory and practice of biomedical engineering. In consultation with their faculty advisor, students choose an area of specialization from topics including biomechanics, instrumentation, and medical preparation. Distinguishing features of the program are its specialty laboratories, summer internships in metropolitan-area private or federal laboratories, and a capstone design seminar.

*First Semester*—UW 20; SEAS 1; ECE 1; BiSc 12; Chem 11; Math 31.

*Second Semester*—BiSc 11; ECE 2; Chem 12; Math 32; Phys 21.

*Third Semester*—ApSc 113; ECE 11, 153; Math 33; Phys 22.

*Fourth Semester*—CSci 49; ECE 20, 117, 140, 154; humanities or social sciences elective.

*Fifth Semester*—CSci 103; ECE 12, 155, 184, 186; two technical electives.

*Sixth Semester*—ApSc 115; ECE 156; two humanities or social sciences electives; two technical electives.

*Seventh Semester*—ECE 157; MAE 238; Phys 127; humanities or social sciences elective; technical elective.

*Eighth Semester*—ECE 158, 159; Phys 128; Phil 135; humanities or social sciences elective; technical elective.

All technical electives must be approved by the academic advisor. More information can be found at [www.ece.gwu.edu](http://www.ece.gwu.edu).

## **Civil Engineering**

Civil engineering encompasses those branches of engineering most closely related to the control and improvement of our environment and of the physical conditions of life. Civil engineers apply many technical specialties in order to plan, design, and construct projects that range from buildings and transportation systems to space stations and space habitats.

*First Semester*—UW 20; SEAS 1; CE 1; Math 31; Chem 11; humanities or social sciences elective.

*Second Semester*—CSci 50; MAE 4; Math 32; Phys 21; humanities or social sciences elective.

*Third Semester*—ApSc 57, 113; Math 33; Phys 22; humanities or social sciences elective.

*Fourth Semester*—ApSc 58; CE 117, 120, 170; Geol 1; humanities or social sciences elective.

*Fifth Semester*—ApSc 115; CE 121, 166, 167, 171; MAE 126; humanities or social sciences elective.

*Sixth Semester*—CE 122, 188, 189, 192, 193, 194; humanities or social sciences elective.

*Seventh Semester*—CE 168, 185, 191, 195, 197; technical elective selected from list below.

*Eighth Semester*—CE 190, 196, 232; technical elective; design elective.

*Technical Electives*—ApSc 199; CE 198, 199, 205, 206, 207, 210, 211, 230, 231, 234, 242, 243, 244, 250, 251, 252, 253, 254, 257, 258, 272, 273, 290; EMSE 260.

*Design Electives*—CE 206, 207, 211, 241, 251, 252, 269.

The Department of Civil and Environmental Engineering also offers the Bachelor of Science major in civil engineering with the options listed below. Additional information on the options can be found at [www.cee.seas.gwu.edu](http://www.cee.seas.gwu.edu).

**Environmental Engineering Option in Civil Engineering**—The environmental engineering option leads to a bachelor's degree in civil engineering. Students are prepared to work in technical environmental fields such as water and wastewater treatment, hazardous waste treatment, and environmental impact assessment. Students are also prepared to pursue graduate study in environmental engineering.

**Transportation Engineering Option in Civil Engineering**—The transportation engineering option leads to a bachelor's degree in civil engineering. Transportation engineers design, construct, maintain, and upgrade transportation facilities, including highways, railroads, airfields, and ports. The program emphasizes automotive, highway, and multi-modal transportation safety and security.

**Medical Preparation Option in Civil Engineering**—The medical preparation option leads to a bachelor's degree in civil engineering and prepares the student for application to medical school. The student is also prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

### **Computer Engineering**

Computer engineering combines electronic design, computer architecture, programming of computing systems, computer networks, and applied mathematics. Students in the program are prepared in the theory and application of hardware and software design, computer networks, embedded systems, and very large scale integrated (VLSI) circuit design and applications. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

*First Semester*—UW 20; ECE 1; Chem 11; Math 31; SEAS 1; elective.

*Second Semester*—CSci 49, 123; ECE 2; Math 32; Phys 21; elective.

*Third Semester*—ApSc 113; CSci 103; ECE 11; Math 33; Phys 22.

*Fourth Semester*—ApSc 115; ECE 20, 117, 140; elective.

*Fifth Semester*—CSci 156; ECE 12, 122, 141, 155, 162.

*Sixth Semester*—ECE 30, 144, 147, 156, 161, 181; elective.

*Seventh Semester*—ECE 126, 157, 182; two electives.

*Eighth Semester*—ECE 128, 158; Phil 135; two electives.

The eight electives must include three 3-credit courses in the social sciences, two 3-credit courses in the humanities, and three 3-credit technical courses. Technical electives may be chosen with the approval of the advisor from advanced undergraduate or graduate courses in

engineering, computer science, mathematics, physical sciences, or biological sciences. More information can be found at [www.ece.gwu.edu](http://www.ece.gwu.edu).

### **Computer Science**

The program combines software development, computer systems and architecture, algorithms, project design, science, and mathematics to provide a strong background in the foundations that underlie computer science. Students are prepared to design and implement software needed for Internet operations, computer graphics and animation, secure systems, and applications for small, large, and embedded systems. In consultation with the advisor, students choose a technical track and a non-technical track. The technical track provides depth in a particular area of computer science, and the non-technical track is intended to enable the student to stay current with our rapidly evolving field and to establish the relevance of their studies in our global and changing environment.

*First Semester*—UW 20; CSci 1, 53; SEAS 1; math requirement; humanities or social sciences elective.

*Second Semester*—CSci 123, 133; math requirement; science requirement; humanities or social sciences elective.

*Third Semester*—CSci 124, 135, 143; science requirement; humanities or social sciences elective.

*Fourth Semester*—CSci 136, 145, 146; science requirement; statistics requirement (ApSc 115 or Stat 51 or 53).

*Fifth Semester*—CSci 152, 153, 154; humanities or social sciences elective.

*Sixth Semester*—CSci 165; technical track elective; non-technical track elective; math or science elective; humanities or social sciences elective; unrestricted elective.

*Seventh Semester*—CSci 195; technical track elective; non-technical track elective; humanities or social sciences elective; unrestricted elective.

*Eighth Semester*—CSci 196; technical track elective; non-technical track elective; unrestricted electives (6 hours).

Mathematics requirements can be met by taking Math 20–21 and Math 32 or Math 31 and 32. All students must take two math courses not counting Math 20; students who take Math 20 must take it as one of their unrestricted electives. Science requirements can be met by choosing from BiSc 11–12, Chem 11–12, and Phys 21–22. The three science requirement courses must include a two-course sequence.

Some examples of technical tracks include computer security and information assurance, digital media, foundations and theory, biomedical computing, systems, and software engineering and applications. Examples of non-technical tracks include business, project management, global engineering, pre-law, and environment and climate change. Students may define their own non-technical track in consultation with their advisor. More information on the tracks and track requirements can be found at [www.cs.gwu.edu](http://www.cs.gwu.edu).

**Medical Preparation Option in Computer Science**—This option is for students interested in pursuing a computer science major with preparation for application to a medical school by combining additional natural science course work with computer science course requirements.

### **Electrical Engineering**

Electrical engineers design the enabling technology for modern telecommunications networks, including the Internet, biomedical instrumentation, and electromagnetic applications. The program focuses on signal processing; communication theory and practice; voice, data, video and multimedia communication networks; very large scale integrated (VLSI) circuit design and

applications; and control systems. Students can take electives in advanced topics, such as optical networks, broadband wireless networks, and technologies for the next generation of information systems.

*First Semester*—UW 20; Chem 11; Math 31; SEAS 1; ECE 1; elective.

*Second Semester*—CSci 49; ECE 2; Math 32; Phys 21; two electives.

*Third Semester*—ApSc 113; CSci 103; ECE 11; Math 33; Phys 22.

*Fourth Semester*—ApSc 114; ECE 20, 117, 140; elective.

*Fifth Semester*—ApSc 115; ECE 12, 122, 141, 155, 162.

*Sixth Semester*—ECE 31, 121, 143, 144, 147, 156.

*Seventh Semester*—ECE 32, 126, 157, 172; elective.

*Eighth Semester*—ECE 158, 177; Phil 135; three electives.

The eight electives must include three 3-credit courses in the social sciences, two 3-credit courses in the humanities, and three 3-credit technical courses. Technical electives may be chosen with the approval of the advisor from advanced undergraduate or graduate courses in engineering, computer science, mathematics, physical sciences, or biological sciences.

The Department of Electrical and Computer Engineering also offers the Bachelor of Science major in electrical engineering with a medical preparation option. More information can be found at [www.ece.gwu.edu](http://www.ece.gwu.edu).

**Medical Preparation Option in Electrical Engineering**—The medical preparation option leads to a bachelor's degree in electrical engineering and prepares the student for application to medical school. The student is also prepared to work in various health sciences fields, to conduct research toward development of electronic equipment to assist in diagnosing and treating



disease, or to continue as a graduate student in engineering with exceptional qualifications for biomedical engineering.

### **Mechanical Engineering**

Mechanical engineering encompasses a vast range of industrial activities. Mechanical engineers conceive, plan, design, and direct the manufacture, distribution, and operation of complex systems. Applications include aerospace, energy conversion, computer-aided design and manufacturing, power and propulsion systems, robotics, and control systems.

*First Semester*—UW 20; SEAS 1; MAE 1; Math 31; Chem 11; humanities or social sciences elective.

*Second Semester*—CSci 50; MAE 2, 4; Math 32; Phys 21; humanities or social sciences elective.

*Third Semester*—ApSc 57, 113; Math 33; Phys 22; humanities or social sciences elective.

*Fourth Semester*—ApSc 58, 130; ECE 11; MAE 117, 131.

*Fifth Semester*—CE 120; MAE 126, 166, 167, 190, 192.

*Sixth Semester*—ApSc 115; MAE 120, 134, 187, 191; humanities or social sciences elective.

*Seventh Semester*—MAE 149, 182, 193; technical electives (6 hours); humanities or social sciences elective.

*Eighth Semester*—MAE 152, 195, 196; technical electives (6 hours); humanities or social sciences elective.

*Technical Electives*—ApSc 199; MAE 128, 129, 145, 155, 162, 163, 172, 198, 199, 210, 220, 221, 228, 229, 231, 232, 234, 235, 237, 238, 240, 241, 242, 247, 249, 251, 262, 280, 287.

Courses not listed here may be selected subject to approval of the advisor and the department.

The Department of Mechanical and Aerospace Engineering also offers the Bachelor of Science major in mechanical engineering with the options listed below. More information on the options can be found at [www.mae.seas.gwu.edu](http://www.mae.seas.gwu.edu).

**Aerospace Option in Mechanical Engineering**—The aerospace engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the aerospace industry or to pursue graduate study in aerospace engineering. It provides a strong foundation in aerodynamics, airplane performance, propulsion, aerospace structures, orbital mechanics, spacecraft dynamics, and aircraft and spacecraft design.

**Biomechanical Engineering Option in Mechanical Engineering**—The biomechanical engineering option leads to a bachelor's degree in mechanical engineering while preparing the student to work in the biomedical industry or to pursue graduate study in biomedical engineering. It provides a strong foundation in human anatomy and physiology, biomechanics, biomaterials, and design of biomedical devices.

**Medical Preparation Option in Mechanical Engineering**—The medical preparation option leads to a bachelor's degree in mechanical engineering and prepares the student for application to medical school. The student is also prepared to work in research and development or to pursue graduate study in the fields of biomechanics and biotechnology.

**Patent Law Option in Mechanical Engineering**—The patent law option in mechanical engineering leads to a bachelor's degree in mechanical engineering while providing a strong foundation in fundamental principles of patent law and the influences of the U.S. patent system on modern engineering design. A student in this option obtains background that can lead to work as a technical specialist in a patent law firm or in the patent department of an industrial

employer. The option also provides excellent preparation for pursuit of a subsequent J.D. that may focus on intellectual property law.

### **Systems Engineering**

The multidisciplinary field of systems engineering applies engineering techniques and mathematical methods to improve planning and decision making in organizational systems composed of people, machines, and procedures. By observing, understanding, modeling, and predicting the behavior of such systems, practitioners of systems engineering assist the decision-making process that seeks to design and operate the systems optimally. Systems engineering finds application in many areas, including communications, energy, environment, finance, health care, information technology, marketing, national defense, project management, software development, and transportation.

Each student must participate in an appropriate internship/co-op experience during the last two years of the program. This requirement may be satisfied by an approved full-time summer position after the second or third year or by one or two approved part-time positions requiring 15–20 hours per week during two of the final four semesters. A position obtained through the GW Co-op Office will usually be acceptable; the position may be either paid or unpaid.

The systems engineering program is designed to provide the student a broad and solid education in the basics of mathematical modeling, software and information systems, and the treatment of uncertainty. Analytical thinking is stressed in order to prepare the student for graduate education or productive professional employment. The program is planned to develop the student's communication skills and awareness of the current professional world.

*First Semester*—UW 20; CSci 53; EMSE 1; SEAS 1; Math 31; science elective.

*Second Semester*—CSci 133; Econ 11; Math 32; science elective; humanities or social sciences elective.

*Third Semester*—ApSc 113; Comm 40, 41, or 42; CSci 143; Math 33; science elective.

*Fourth Semester*—ApSc 115; CSci 147; EMSE 109, 160; humanities or social sciences elective.

*Fifth Semester*—ApSc 116; CSci elective; EMSE 101, 135; humanities or social sciences elective.

*Sixth Semester*—EMSE 102, 173; Stat 183; technical elective; elective in SEAS, mathematics, or statistics; humanities or social sciences elective.

*Seventh Semester*—EMSE 154, 171, 211; ISTM 120; technical elective; 100-level elective in SEAS, mathematics, or statistics.

*Eighth Semester*—EMSE 182, 191; ISTM 121 or CSci 178; two technical electives.

#### *Technical Electives*

Each systems engineering major will gain specific expertise in a chosen technical area by taking a four-course sequence from another department or departments of the University. The four technical electives are selected with the approval of the student's academic advisor. Areas frequently chosen are computer science, economics, finance, management, mathematics, naval science, statistics, and specific fields of engineering.

The Department of Engineering Management and Systems Engineering also offers the Bachelor of Science major in systems engineering with a medical preparation option. Additional information can be found at [www.emse.gwu.edu](http://www.emse.gwu.edu).

**Medical Preparation Option in Systems Engineering**—The medical preparation option leads to a bachelor's degree in systems engineering and quantitatively prepares students for

medical careers through a program that emphasizes decision modeling. Decision modeling is increasingly applicable to the medical field because of the growing use of computers and information systems in medicine and the interplay of diagnosis, treatment, and economics.

### **Bachelor of Arts Degree Programs**

The School of Engineering and Applied Science offers a Bachelor of Arts degree, with majors in applied science and technology and in computer science. Each program provides a strong and level base for students who intend to make their careers in fields allied to science and technology or to computer science.

### **Applied Science and Technology**

The Bachelor of Arts major in applied science and technology is a broad-based engineering-oriented program, with a breadth of liberal arts, for students who intend to make their careers in fields allied to science and technology and/or continue their education toward professional careers in law, medicine, business, teaching, or the media. It is designed to help students pursue their goals in a world that relies more and more upon science and technology.

*First Semester*—UW 20, EMSE 1, SEAS 1, Chem 11, Math 31, humanities or social sciences elective.

*Second Semester*—CSci 49 or 53, Chem 12, Math 32, humanities or social sciences elective, arts elective.

*Third Semester*—CSci 103 or 133, Phys 11 or 21, literature elective, two unrestricted electives.

*Fourth Semester*—ApSc 115, EMSE 160, Phys 12 or 22, literature elective, unrestricted elective.

*Fifth Semester*—BiSc 11, EMSE 101, Comm 40 or 41 or 42, MAE 4, allied minor elective.

*Sixth Semester*—BiSc 12, ISTM 121, two allied minor electives, humanities or social sciences elective.

*Seventh Semester*—MAE 192; EMSE 135, 211; allied minor elective, SEAS elective.

*Eighth Semester*—CE 190, allied minor elective, humanities or social sciences elective, three unrestricted electives.

*Electives*—Electives in specified categories are chosen from lists of courses available from the advisor. Allied minor electives are selected, with the approval of the advisor, to form a coherent and meaningful program of 15 credit hours. Popular selections include biology, communication, computer science, design, economics, engineering, environmental studies, finance, international business, management, mathematics, medical preparation, psychology, statistics, and operations research.

### **Computer Science**

The Bachelor of Arts major in computer science provides a broad-based liberal arts curriculum for students who wish to augment technical knowledge with humanities, social sciences, business, communication, or management skills. Foundation courses focus on mathematics, science, software design and programming, computer systems and architecture, and algorithm design. Additional breadth or depth is afforded by selection of technical track courses that build on the foundations to provide in-depth exposure to a specific field in computer science. The program is designed for those with interests in two or more disciplines; students complete a second major or two minors in another academic department.

*First Semester*—UW 20, CSci 1, 53; SEAS 1; math requirement; social and behavioral sciences elective.

*Second Semester*—CSci 123, 133; math requirement; science requirement; social and behavioral sciences elective.

*Third Semester*—CSci 135, 143; science requirement; statistics requirement (ApSc 115 or Stat 51 or 53); humanities elective.

*Fourth Semester*—CSci 146; science requirement; humanities elective; second major elective; unrestricted elective.

*Fifth Semester*—Computer science restricted elective; creative arts elective; second major electives (9 hours).

*Sixth Semester*—Technical track elective; humanities elective; foreign languages and culture elective; second major electives (6 hours).

*Seventh Semester*—Computer science restricted elective; technical track elective; foreign languages and culture elective; second major electives (6 hours).

*Eighth Semester*—Technical track elective; humanities elective; unrestricted elective; second major electives (6 hours).

Students in this program complete a second major or two minors in another department outside engineering. Additional course requirements include UW 20, Math 20–21 or 31–32; CSci 1, 53, 123, 133, 135, 143, 146; two restricted electives chosen from CSci 136, 145, 152, 153, 154; three courses from a technical track in computer science (see the department for requirements); general curriculum requirement courses chosen from specified lists available from the advisor and from the department website in social or behavioral sciences, humanities, foreign languages and cultures, and creative and performing arts. Students are expected to undertake a significant project by completing either CSci 195–96 or a project or senior thesis in their second major.

The minimum number of credits required for the major in computer science is 120; the credit total depends on the second major or minors chosen by the student. Students interested in pursuing a computer science major with preparation for application to medical school can also choose the medical preparation option. Additional information about the Bachelor of Arts major in computer science is available at [www.cs.gwu.edu/academics](http://www.cs.gwu.edu/academics).

## **Special Programs**

### **Combined Degree Programs**

Combined degree programs available to SEAS students include the B.S. and M.S. in civil engineering; the B.A. or B.S. and M.S. in computer science; the B.S. and M.S. in systems engineering; the B.S. in biomedical engineering, computer engineering, or electrical engineering and M.S. in computer engineering or electrical engineering; and the B.S. in computer engineering, computer science, electrical engineering, or systems engineering and M.S. in engineering management. Also available is the B.A. in applied science and technology or computer science in SEAS and M.Ed. in secondary education (with a specialization in computer science, science, or mathematics) in the Graduate School of Education and Human Development. Specific information is available from the departments concerned.

### **Integrated Engineering and Law Program**

The integrated engineering and law program provides an opportunity for very highly qualified entering students to complete a B.S. or B.A. degree in a SEAS field and then a J.D. degree, by assuring admission to the GW Law School's J.D. program for students who meet stated conditions. Detailed information on this program is available from the Office of Undergraduate Admissions.

### **Minors and Secondary Fields of Study**



School of Engineering and Applied Science students with majors other than systems engineering may graduate with a minor in operations research in addition to their major. Four courses are required for the minor: EMSE 101, 154, 173, and a fourth course selected from EMSE 102, 135, 171, 182. Depending on the student's major, additional credit hours beyond the minimum required for the major may be necessary in order to complete the minor in operations research; students should consult their advisors before embarking upon the minor requirements.

SEAS students in majors other than computer science may complete a minor in computer science by taking CSci 53, 123, 133, 143, and two additional approved computer science courses numbered 135 or higher.

Minors in biomedical engineering, computer engineering, and electrical engineering are available to SEAS students who are earning their majors outside the Department of Electrical and Computer Engineering. Consult the department for requirements.

The School offers secondary fields of study in biomedical engineering, computer engineering, computer science, electrical engineering, engineering analysis, and operations research to students in other schools of the University. SEAS students are cautioned to consult their advisor and department chair before enrolling in a secondary field of study in another school of the University.

### **Concentration in General Business**

The GW School of Business offers a concentration in general business for well-qualified SEAS undergraduates. Depending on the student's major, additional credit hours beyond the minimum required for the major may be necessary in order to complete this concentration; students should consult their advisor before requesting to add the concentration to their program or beginning to fulfill its requirements.

## **Double Majors**

Students who complete the requirements for two majors in SEAS may graduate with a double major, provided the two majors are in different departments. Consult advisors in the two departments and declare both majors on the appropriate form in the SEAS Office of Student Services, Advising, and Records.

SEAS students may also pursue a second major in Columbian College of Arts and Sciences or the Elliott School of International Affairs, and Columbian College and Elliott School students may pursue a second major in SEAS, provided that permission has been obtained from the appropriate administrative office of each of the two schools.

The degree is earned from the home school, and students must complete the major in their own school in order to graduate.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

## **3:2 Dual-Degree Programs**

The School of Engineering and Applied Science has developed 3:2 dual-degree programs in liberal arts and engineering with the following institutions: Bowie State University, Gallaudet University, Hood College, Bridgewater College, St. Thomas Aquinas College, and Trinity University. Students enroll initially at one of the above institutions and pursue a three-year course of studies covering social sciences, humanities, mathematics, physics, and chemistry. They then follow a two-year program at SEAS in any of the areas of engineering or computer science offered in the School's regular four-year programs. Upon successful completion of the two-year program at GW, students are awarded two baccalaureates: a B.S. or B.A. from the first

institution and a B.S. or B.A. from GW. For further information on the 3:2 dual-degree programs, contact the admissions offices of the institutions listed above.

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## **ELLIOTT SCHOOL OF INTERNATIONAL AFFAIRS**

*Dean* M.E. Brown

*Associate Deans* M. Mochizuki, B.D. Miller, D. Shaw

*Assistant Dean* L. Stephenson

The Elliott School of International Affairs offers graduate and undergraduate programs to prepare individuals for understanding and working in an increasingly globalized world. The historical roots of the Elliott School extend back to the establishment of the School of Comparative Jurisprudence and Diplomacy in 1898. In 1966, the School separated from the School of Government, Business, and International Affairs to become an independent unit, the School of Public and International Affairs. In 1987, the name was changed to the School of International Affairs, and in 1988 the School was renamed in honor of Evelyn E. and Lloyd H. Elliott. Lloyd Elliott was the President of The George Washington University from 1965 to 1988.

### **The Degree of Bachelor of Arts**

The Elliott School offers programs leading to the degree of Bachelor of Arts with majors in international affairs, Asian studies, Latin American and hemispheric studies, and Middle East studies. These programs provide a broad liberal arts education and depth in historical and contemporary issues in international affairs. The programs are interdisciplinary and multidisciplinary, combining courses offered through the School with courses offered by other schools and departments of the University.

### **Residence**

Students must complete at least 60 of their final 90 credit hours in residence to earn a degree in the School. Students approved for study abroad during their junior or senior year may request an exception through the Office of Academic Advising and Student Services. Students wishing to transfer from another division of the University into a degree program in the Elliott School must have completed 24 credits with a cumulative grade-point average of 3.0 or above at the time of transfer. Except in special circumstances, at least 9 of the final 15 hours must be completed in residence.

### **Academic Standing**

In order to graduate, a student must complete 120 credit hours with a cumulative grade-point average of 2.0. Courses in exercise and sport activities are not counted toward the degree

**Semester Warning**—A student whose cumulative grade-point average is less than 2.0 after attempting a minimum of 12 credit hours is placed on semester warning at the end of the semester and is strongly advised to take corrective measures (e.g., limitation of course load to no more than 13 credit hours).

**Probation**—A student whose cumulative grade-point average is less than 2.0 but at least 1.0 any time after having attempted a minimum of 24 credit hours is placed on probation: “first probation” for the initial semester, “second probation” if continued on probation for a second semester. For part-time students and those enrolled in summer sessions, a semester is interpreted to mean a time interval in which at least 12 credit hours have been attempted. A student on probation is limited to no more than 13 credit hours of course work per semester. A student who resumes or reaches a cumulative grade-point average of 2.0 or more after a first or second semester on probation is removed from probationary status.

**Suspension**—Failure to resume or reach a cumulative grade-point average of 2.0 after two successive semesters on probation results in suspension. A student whose cumulative grade-point average falls below 1.0 any time after having enrolled in a minimum of 24 credit hours as a student in the Elliott School will be suspended. Students who are suspended for poor scholarship may apply for readmission after the lapse of one fall or spring semester. To be considered for readmission, the student must submit evidence to the Dean's Council of conduct during absence from the University which indicates that the student will profit from readmission. A student suspended twice for poor scholarship will not be readmitted.

**Dean's Honor List**—The name of every student who attains a 3.75 grade-point average in course work is placed on the Dean's Honor List for that semester. Appearance on the list is limited to full-time students registered for a minimum of 15 credit hours with letter grades in a given semester and to part-time students registered for a minimum of 12 credit hours with letter grades over a period of two consecutive semesters, which may include a summer term.

**Timely Progress Toward the Degree**—Students who fail to make adequate and timely progress toward the degree, through repeated leaves or repeated failure to complete an appropriate number of credits per semester, may be dismissed from the University (see Right to Dismiss Students under University Regulations). Students dismissed on these grounds may apply for readmission after supplying sufficient evidence of academic promise.

**Special Honors**—In addition to the general requirements stated under University Regulations, a candidate for Special Honors in an Elliott School major must have attained a 3.4 grade-point average overall and complete either an Elliott School or Honors senior seminar, or an Honors senior thesis or a major independent study research project approved by the program director. Students must apply for honors candidacy prior to the beginning of the senior year.

## **Curriculum Requirements for the First Two Years**

Curriculum requirements for Elliott School students in the freshman and sophomore years are listed below. Consult [gwu.edu/~elliott/academics/ugrad](http://gwu.edu/~elliott/academics/ugrad) before choosing courses to fulfill these requirements. Information on earning credit by examination or waiving curriculum requirements is available from academic advisors in the Elliott School.

As a basis for all Elliott School B.A. programs, students take IAff 5, Econ 11–12, PSc 1, Hist 38, and an introductory course chosen from Anth 2 or 4, Geog 1 or 3, or PSc 2. In addition, all students take (1) UW 20; (2) 6 credits of math or science courses; (3) 9 credits of humanities or 6 credits of humanities and 3 credits of creative arts courses.

All Elliott School students must demonstrate third-year proficiency in an appropriate modern foreign language by course work or examination.

## **Requirements for the Majors**

For the four Elliott School majors, lists of designated courses that fulfill concentration or major requirements are found at [gwu.edu/~elliott/academics/ugrad](http://gwu.edu/~elliott/academics/ugrad). With approval of the advisor or program director, pertinent Special Topics or 700 Series or other courses may be taken in place of those listed.

**International Affairs**—Required courses for the major: Econ 180 or 181–82; one 100-level course selected from designated lists for each of the following: research methods (from Anth, Econ, Geog, PSc, Psyc, Soc, Stat); international politics (from PSc); history of U.S. international relations (from Hist); an Anth or Geog course.

Each student must take three foundational courses in functions or regions (one must be functional and one must be regional) and 15 credit hours of additional course work in either a functional or regional concentration. The functional concentrations are international politics;

international economics; comparative political, economic, and social systems; international development; contemporary cultures and societies; conflict and security; global public health; international environmental resources. The regional concentrations are Africa, Asia, Europe and Eurasia, Latin America, Middle East.

**Asian Studies**—Required courses for the major: IAff 91; Econ 169 or 170; three courses selected from a list of approved history and culture courses; two courses selected from PSc 170 through 175 and Geog 165; one course in Asian literature; and three 100-level Asia-related courses, selected in consultation with the program director. Completion of third-year–level language study in an approved Asian language is required.

**Latin American and Hemispheric Studies**—Required courses for the major: IAff 90; Econ 185; PSc 183 or 184; Geog 161; Hist 163 or 164; one course chosen from Anth 170, 172, 185; one approved course in Spanish-American literature. Four additional 100-level courses dealing with Latin American and Hemispheric studies and selected in consultation with the program director; two of these courses are selected from international affairs, and two from anthropology, art history, economics, geography, history, political science, and Hispanic literatures. Completion of third-year–level language study in Spanish (Span 10) or another approved foreign language is required.

**Middle East Studies**—Required courses for the major: Hmn 8 or IAff 96 as a foundation course; two courses selected from Hist 107, 108, 114, 115, 158, 193, 194; two courses selected from PSc 176, 177, 178, 179; two courses selected from Rel 9, 107, 112, 115, 161, 163, 164, 165; a course selected from Econ 136, 151, 180, 181–82; a course selected from Arab 104, 106, 120, 121; Clas 81, 100, 101, 102; or Hebr 104, 120–21; and two additional courses related to the Middle East from any department, selected in consultation with the program director.

Completion of third-year–level language study in Arabic (Arab 104 or 106) or Hebrew (Hebr 106) is required.

### **General Elliott School Policies**

**Scholarship Performance in the Major**—All courses indicated as Requirements for the Majors (see above), including third-year language proficiency, must be completed with grades no lower than *C–*. If a student receives a grade of *D+*, *D*, or *D–* in any of these courses, the credit will count toward the degree, but the student must either repeat the course or, with approval of the academic advisor, substitute another course, in either case with a grade no lower than *C–*. If the student must repeat the course, credit for the repetition does not count toward the degree, and grades for both the initial course and the repeated course are used to compute the GPA. If the academic advisor allows another course to be substituted, the initial course is considered to be an elective. The student is expected to consult the academic advisor in all matters affecting the program of study, such as changes, substitutions, withdrawals, or transfer of credit from other institutions.

**Incompletes**—Conditions under which the symbol *I* (Incomplete) may be assigned are described under University Regulations. Incomplete course work must be completed no later than one calendar year from the last day of the examination period of the semester or summer session in which the indication of *I* was assigned. When work for the course is complete, the grade earned will be indicated in the form of *I*, followed by the final grade. The indication of *I* cannot be removed from the transcript. An indication of *I* that is not changed within this period automatically becomes an *IF*. The *I* cannot be changed by reregistering for the course at GW or by taking its equivalent elsewhere. In cases of well-documented extenuating circumstances, an instructor and a student may jointly petition the Dean's Council for additional time in which to



complete the work of the course. Such petitions should be submitted within a year of the assignment of the *I*. Students will not be permitted to register for any additional course work if they have more than two Incompletes on their record.

**Pass/No Pass Option**—A student who has a cumulative grade-point average of 2.5 or better may, with the approval of an advisor and the dean, take one course per semester and receive a grade of *P*, Pass, or *NP*, No Pass, which will be recorded on the student's transcript but will not be reflected in the cumulative grade average. A student must sign up for such an option at the Academic Advising and Student Services office within the first eight weeks of classes. Under no circumstances may a student change from pass/no pass status to graded status, or vice versa, after the end of the eighth week of the semester. Foreign language courses and required courses in the student's major (except those in which the grade of *P* or *NP* is normally assigned) may not be taken on a pass/no pass basis. A transfer student may not elect to take a course on a pass/no pass basis until the second semester of enrollment in the University. No more than six courses in which the grade of *P* or *NP* is assigned will apply toward the degree, including courses in which the grade of *P* or *NP* is normally given.

**Academic Work Load**—The normal academic work load for a full-time student is 15 credit hours. A full-time student not on probation may take a course load of up to 17 credit hours. A student with a strong academic record may take up to 18 credit hours with the approval of the dean (additional tuition charges apply). Students on probation are limited to 13 hours. Students doing internships or working are advised to reduce their course load.

**Study Abroad**—Students are encouraged to travel and study abroad. Those wishing to study abroad must consult their academic advisor and the University's Office for Study Abroad. A maximum of 30 credits may be transferred in from study abroad. GW courses taken abroad for

GW credit do not apply to this maximum (i.e., specific courses taken through GW Study Centers and GW Summer Abroad for which students receive GW credit as opposed to transfer credit). Students must secure the dean's prior approval for any plan of study abroad if the credit earned is intended to apply to the degree program in which they are registered. Students must apply to a program from the University's List of Study Abroad Programs. A catalogue or other description of the study abroad program must be presented for consideration together with detailed descriptions of the courses to be taken. See Study Abroad Programs.

**Internships**—Internships offer students the opportunity to make practical use of the knowledge they acquire in the classroom. Undergraduates who have completed at least 30 credit hours and have a cumulative grade-point average of at least 2.5 are eligible to arrange internships for credit (to a total maximum of 6 credits toward the degree). Academic work in the field of the internship is required. A zero-credit internship is also available. Internships are available in the private, nonprofit, and public sectors. Students are responsible for locating their own internships; listings are posted at [gwired.gwu.edu/career](http://gwired.gwu.edu/career).

**Double Majors**—Students who complete the requirements of two majors in the Elliott School (such as international affairs and Asian studies) may graduate with a double major. Consult with an Elliott School advisor to officially declare both majors on the appropriate form available at [gwu.edu/~elliott/academics/ugrad/forms.cfm](http://gwu.edu/~elliott/academics/ugrad/forms.cfm).

Students in the Elliott School may take a second major offered by Columbian College of Arts and Sciences or the School of Engineering and Applied Science (majors in communication, English and creative writing, journalism and mass communication, and political communication are excluded). Permission for the second major must be obtained from the appropriate administrative office of the other school.

Students in Columbian College of Arts and Sciences and the School of Engineering and Applied Science may take a second major in the Elliott School. Students wishing to pursue these options must request approval through the Elliott School Academic Advising and Student Services office. Students must complete all degree requirements for their major in their home school in order to graduate with a second major from the other school.

In all cases, double majors do not result in two degrees. See Double Majors and Double Degrees under University Regulations.

**Secondary Fields of Study**—Elliott School students can take a secondary field of study, such as business, economics, or languages, in other schools of the University. Students from other schools of the University can take a secondary field of study in international affairs in the Elliott School. See an academic advisor in the Elliott School.

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## **SCHOOL OF PUBLIC HEALTH AND HEALTH SERVICES**

*Interim Dean* J.J. Reum

*Associate Deans* K.L. Hunting, R.T. Parkin, B. Parrish

The School of Public Health and Health Services was established within The George Washington University in 1997. Seven departments form SPHHS: Environmental and Occupational Health, Epidemiology and Biostatistics, Exercise Science, Global Health, Health Policy, Health Services Management and Leadership, and Prevention and Community Health.

Degree programs offered by SPHHS include the Bachelor of Science with majors in athletic training, exercise science, and public health; the Master of Public Health; the Master of Health Services Administration; the Master of Science in the fields of exercise science, health policy, and public health microbiology and emerging infectious diseases; and the Doctor of Public

Health. SPHHS offers a Bachelor of Science/Master of Public Health dual degree program and cooperates with several other schools within GW in offering combined degree programs.

Secondary fields for undergraduates in schools other than SPHHS and graduate certificate programs are offered as well.

**SPHHS Regulations**—SPHHS regulations governing the following subjects are analogous to those of Columbian College of Arts and Sciences: residence; academic work load; academic standing (including probation, suspension, semester warning, and mid-semester warning); dean's lists; incompletes; pass/no pass option; earning an additional hour of credit; and placement, waiver, and credit examinations. See the section headed Columbian College of Arts and Sciences.

*Special Honors*—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in athletic training or exercise science must have a grade-point average of at least 3.5 in required courses in the major and at least a 3.25 average overall; and must submit an honors paper in ExSc 171. Only if a committee of at least two faculty members approves the honors paper will the student be recommended for graduation with Special Honors.

## **Bachelor of Science Degree Programs**

### **Athletic Training**

The Bachelor of Science with a major in athletic training is accredited by the Commission on Accreditation of Athletic Training Education. Graduates are prepared to take the Board of Certification Examination.

The program prepares students for a range of careers in an allied health care profession responsible for the health care of athletes and other physically active individuals. Athletic

trainers provide information on injury prevention, evaluate and treat injuries, and provide related aspects of health care to the physically active.

Students may apply to enter the athletic training major upon completion of 30 credit hours with a minimum grade-point average of 2.5. Admission into the Athletic Training Education Program is selective and may be contingent upon availability of clinical practicum sites and approved clinical instructors. Students who wish to apply for admission to the major must meet the following requirements: complete the Athletic Training Education Program application; have prior athletic training observation experience; submit a personal essay; complete a personal interview; complete ExSc 50 Emergency Procedures and Safety Skills and ExSc 102 Introduction to Athletic Training with a minimum grade of *B* in each of the two courses; complete the Technical Standards form; and submit proof (or waiver) of hepatitis B vaccination, MMR vaccinations, and a TB test and proof of having passed a physical exam for the physical tasks involved in athletic training. Students should expect additional expenses due to required practicum travel.

Transfer students must meet all of the above criteria for admission into the Athletic Training Education Program. Transfer credit from other institutions will be evaluated by departmental faculty for acceptance by the School of Public Health and Health Services.

The degree program requires 124 credit hours, with 45 credits of general curriculum courses: the University Writing requirements; BiSc 11–12; Math 20 or higher; Psyc 1; PubH 101 or 102 or 103; Stat 53; a course chosen from SpHr 11 or Comm 40 or 41 or 42; two additional approved courses chosen from the social and behavioral sciences; and two approved courses chosen from the humanities.

Required courses in the athletic training major are 74 credit hours: ExSc 50, 102, 109, 110, 119, 126, 137, 141, 142, 145 or 146, 151, 152, 154–55, 158, 159, 160, 161, 162, 163, 164, 168, 169, and 171.

In addition to School of Public Health and Health Services regulations, students must maintain a 2.5 overall GPA and show timely progress toward the degree.

### **Exercise Science**

The Bachelor of Science with a major in exercise science prepares students for careers in health promotion, corporate fitness and wellness programs, exercise physiology, personal training, exercise rehabilitation, and coaching, as well as graduate study in exercise science, sport psychology, physical therapy, medicine, and other clinical health professions.

Students applying to the exercise science major may enter the program as freshmen or as transfer students with a minimum grade-point average of 2.0.

The 124-credit-hour program requires the general curriculum courses listed directly above with the athletic training major, an exercise science core, courses in the concentration, and electives as necessary to complete the degree program. See the section above for graduation with Special Honors.

The 43-credit exercise science core consists of ExSc 50, 103, 109, 110, 119, 142, 151, 152, 154–55, 158, 171, and 175.

Students in the exercise science program select either the health and fitness concentration or the pre-health professional concentration, typically by the sophomore year.

*Health and Fitness Concentration*—24 credit hours: ExSc 121, 138; PubH 103; and five courses chosen from ExSc 105, 120, 125, 133, 136, 140, 145, 146, or designated offerings of ExSc 101.

*Pre-Health Professional Concentration*—28 credit hours chosen in accordance with the intended professional field. For those preparing to apply to a physical therapy program: ExSc 159, 168, 169; Phys 11–12; Chem 11–12. For those preparing to apply to nursing, physician assistant, or M.D. programs: ExSc 159; Phys 11–12; Chem 11–12, 151–52, 153–54.

### **Public Health**

The Bachelor of Science with a major in public health aims to increase understanding of public health principles for students who intend graduate study toward careers in law, medicine or another health profession, or public health. The program is also available to students who plan to pursue entry-level jobs in sectors of public health or health services. With a liberal arts base, the program emphasizes technical detail and analytic skills, nurturing critical thinking and synthesis of information in recognizing historical and societal associations of trends in public health and health care delivery.

Students may apply to enter the 120-credit-hour public health major during the semester prior to completing 60 credits with a minimum grade-point average of 3.0. General curriculum requirements listed under Columbian College of Arts and Sciences must be completed, with the exception that a statistics course must be included in fulfillment of the quantitative and logical reasoning category. Required courses in the major are PubH 101, 102, 103, 105, 106, 121, 132, 172, 180, 191, 195, and 9 credits of SPHHS electives chosen from specified courses with approval of the advisor. The remainder of the program may be a secondary field, a minor, or approved electives.

Students interested in the dual degree program consisting of the Bachelor of Science with a major in public health and the Master of Public Health should consult SPHHS admissions during the semester prior to completing 60 credits.

### **Secondary Fields of Study**

Secondary fields of study in public health and in exercise science are available to undergraduates in other schools of the University. See the entries for Exercise Science and for Public Health in the course listings section for courses that pertain to these secondary fields. SPHHS students may choose a secondary field from Columbian College of Arts and Sciences, the Elliott School of International Affairs, or the Schools of Business, Engineering and Applied Science, or Medicine and Health Sciences.

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### **SCHOOL OF MEDICINE AND HEALTH SCIENCES**

The School of Medicine and Health Sciences offers programs to prepare health sciences professionals in selected disciplines, emphasizing the interdependent roles of the network of professionals who constitute the health care team. For specific information on the requirements of the undergraduate degree programs described briefly below, see [www.gwumc.edu/healthsci](http://www.gwumc.edu/healthsci).

#### **Bachelor of Science in Health Sciences Degree Programs**

In addition to the Bachelor of Science in Health Sciences degree programs listed here, certificate programs are offered in several areas—some in conjunction with degree programs, others freestanding. All undergraduate health sciences programs are designed for upper-division transfer students who have completed a minimum of 60 credit hours of specified course work at an accredited postsecondary institution. The Bachelor of Science in Health Sciences may be earned via distance education in clinical management and leadership, clinical research administration, clinical laboratory science, and emergency health services.

**Pharmacogenomics**—The field of pharmacogenomics is emerging as more is learned about the genetic structure in the human body. Students enrolled in the pharmacogenomics major may



apply for admission to the Doctor of Pharmacy degree program in Shenandoah University's Bernard J. Dunn School of Pharmacy; students accepted for admission may be enrolled in the second year of Shenandoah's Pharm.D. program upon completion of their GW degree.

Alternatively, graduates of the pharmacogenomics program are qualified to pursue a graduate degree or work in the biotechnology or pharmaceutical field.

Applicants to the 127-credit-hour program must have a grade-point average of 3.0 in 60 credits of specified prerequisite courses. The program is available on a full-time basis only.

**Clinical Laboratory Science**—Clinical laboratory scientists perform and evaluate various laboratory procedures to determine the absence, presence, extent, and basis of disease. As medical investigators, program graduates perform complex examinations on state-of-the-art instruments and computers in the areas of hematology, chemistry, microbiology, immunology, and blood banking.

Applicants to the 120-credit-hour program must have satisfactorily completed 65 credits in specified courses, complete a telephone interview, and submit an Essential Functions Acknowledgement Form.

**Emergency Health Services**—Emergency health services personnel may plan and organize programs, supervise emergency department clinicians, assist in projects that require expertise in emergency medical procedures, and function in the network of information systems that is central to emergency care.

Applicants must hold certification as an Emergency Medical Technician. Where applicable, the following records should be provided: proof of current participation in an emergency medical services system and photocopies of scores or certificates from national registry examinations or certifying board examinations. The program requires 126 credit hours.

**Clinical Management and Leadership**—The major in clinical management and leadership has been developed for health care professionals prepared at the associate's degree level (e.g., radiographers, respiratory therapists, nurses, medical laboratory technicians) to broaden knowledge and experience in the management and leadership of health sciences services and develop pathways for career advancement.

Applicants must submit documentation of an associate's degree or equivalent preparation in a health sciences discipline and current professional certification or other appropriate health science credential. The program requires 132 credit hours. A bachelor's/master's dual-degree program is available.

**Clinical Research Administration**—Clinical research administration is a large and expanding field that involves the processes in which products (drugs, devices, biologicals) and treatment protocols are developed for patient care. This major prepares health sciences professionals to participate in the science and business of developing these patient care products and protocols.

Applicants must submit documentation of completion of at least 60 credit hours of college-level course work and current professional certification or other appropriate health sciences credentials. The program requires 132 credit hours. A bachelor's/master's dual-degree program is available.

**Sonography**—Using ultrasound technology, diagnostic medical sonographers scan patients to obtain images that help physicians diagnose disease. Students in this full-time bachelor's degree program develop competencies in at least four subspecialties of ultrasound imaging.

Students applying to the 128-credit-hour program must have satisfactorily completed 60 credits in specified course work, of which up to 48 credits may be from completion of an

approved program in diagnostic radiology, nuclear medicine technology, radiation therapy technology, or diagnostic medical sonography, provided students hold or will hold current registration during the first semester of study at GW.

### **Bachelor of Science in Nursing**

A second-degree program, the Bachelor of Science in Nursing, has been developed by the School of Medicine and Health Sciences for students who already hold a bachelor's degree. B.S.N. graduates are prepared to be generalist nurses who provide direct patient care and coordinate and manage patient care. Based at GW's Virginia Campus, the B.S.N. program is taken on a full-time basis over four semesters. A bachelor's/master's dual-degree program has been established, by which up to 12 of the 60 credit hours constituting the Bachelor of Science in Nursing may be applied as cross-credits toward the Master of Science in Nursing.

### **Secondary Fields of Study**

See Health Sciences and Anatomy in the course listings section for courses that pertain to the secondary fields in health sciences and in human anatomy. See [www.gwumc.edu/healthsci](http://www.gwumc.edu/healthsci) and [www.gwumc.edu/anatomy](http://www.gwumc.edu/anatomy).

### **The Doctor of Medicine Early Selection Program**

The School of Medicine and Health Sciences offers an early selection program intended to give talented and committed students early assurance of admission to the M.D. program. Students of exceptional promise are chosen for the early selection program at the end of their sophomore year and are expected to modify their planned curriculum for the junior and senior years toward more creative and difficult course choices. Early assurance of admission is planned to provide students the freedom to pursue a rigorous liberal education, while completing minimal premedical requirements without concern for the grade-point average. Specific details about the

early selection program are available through the Office of Admissions of the School of Medicine and Health Sciences.

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## Courses

### **COURSES OF INSTRUCTION**

This section provides listings and descriptions of undergraduate courses offered by the departments and programs of the GW schools included in this Bulletin. Degree requirements of departments and programs in Columbian College of Arts and Sciences appear under the department or program heading; degree requirements of the School of Engineering and Applied Science, the School of Business, the Elliott School of International Affairs, and the School of Public Health and Health Services appear under the respective school's section.

The number of credit hours given for the satisfactory completion of a course is indicated in parentheses after the title of the course. An academic-year course giving 3 credits each semester is marked (3–3). A credit hour may be defined as one 50-minute period of class work or one laboratory period a week for one semester.

Many course descriptions indicate the semester (fall or spring) for which the course is likely to be scheduled. The term *academic year* is used with two-semester courses and generally indicates that the first half of the course is to be offered in the fall semester and the second half in the spring semester. Few offerings for the summer sessions are listed in this Bulletin; consult [www.gwu.edu/summer](http://www.gwu.edu/summer) for additional summer offerings. Schedules of Classes are available online at [www.gwu.edu/~schedule](http://www.gwu.edu/~schedule).

Note that prerequisites indicated near the end of course descriptions are often followed by the phrase *or equivalent*, although this should be understood in all cases; academic departments may require faculty approval of equivalent prerequisites. Prerequisites that pertain to many or all of a department's courses appear in a note preceding the department's course list.

The courses as listed here are subject to change. The University reserves the right to withdraw any course announced or to add course fees.

### **Key to Abbreviations**

The following abbreviations are used for course designations. (The list excludes designations for courses limited to students in the School of Medicine and Health Sciences.)

**ACA** Classical Acting

**Accy** Accountancy

**AmSt** American Studies

**Anat** Anatomy

**Anth** Anthropology

**ApSc** Applied Science

**Arab** Arabic

**AH** Art History

**ArTh** Art Therapy

**Astr** Astronomy

**Bioc** Biochemistry

**BiSc** Biological Sciences

**BmSc** Biomedical Sciences

**Bios** Biostatistics

**BAdm** Business Administration

**Chem** Chemistry

**Chin** Chinese

**CE** Civil Engineering

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|-------------|--|
| <b>Clas</b> | Classical Studies                              |
| <b>CPS</b>  | College of Professional Studies                |
| <b>CCAS</b> | Columbian College of Arts and Sciences         |
| <b>Comm</b> | Communication                                  |
| <b>CSci</b> | Computer Science                               |
| <b>Cnsl</b> | Counseling                                     |
| <b>DnSc</b> | Decision Sciences                              |
| <b>EALL</b> | East Asian Languages and Literatures           |
| <b>Econ</b> | Economics                                      |
| <b>Educ</b> | Educational Leadership                         |
| <b>ECE</b>  | Electrical and Computer Engineering            |
| <b>EHS</b>  | Emergency Health Services                      |
| <b>EMSE</b> | Engineering Management and Systems Engineering |
| <b>Engl</b> | English  |
| <b>EAP</b>  | English for Academic Purposes                  |
| <b>EnRP</b> | Environmental Resource Policy                  |
| <b>Epid</b> | Epidemiology                                   |
| <b>ExSA</b> | Exercise and Sport Activities                  |
| <b>ExSc</b> | Exercise Science                               |
| <b>Film</b> | Film Studies                                   |
| <b>Fina</b> | Finance  |
| <b>FA</b>   | Fine Arts                                      |
| <b>ForS</b> | Forensic Sciences                              |

|             |   |
|-------------|---|
| <b>Fren</b> | French  |
| <b>Geog</b> | Geography                                     |
| <b>Geol</b> | Geological Sciences                           |
| <b>Ger</b>  | German  |
| <b>GreK</b> | Greek   |
| <b>PSHC</b> | Health Care Corporate Compliance              |
| <b>HSci</b> | Health Sciences                               |
| <b>HSML</b> | Health Services Management and Leadership     |
| <b>HIWI</b> | Health and Wellness                           |
| <b>Hebr</b> | Hebrew  |
| <b>Hist</b> | History                                       |
| <b>HomP</b> | Hominid Paleobiology                          |
| <b>Honr</b> | Honors  |
| <b>HDev</b> | Human Development                             |
| <b>HOL</b>  | Human and Organizational Learning             |
| <b>HmSr</b> | Human Services                                |
| <b>Hmn</b>  | Humanities                                    |
| <b>ISTM</b> | Information Systems and Technology Management |
| <b>IntD</b> | Interior Design                               |
| <b>IAff</b> | International Affairs                         |
| <b>IBus</b> | International Business                        |
| <b>Ital</b> | Italian                                       |
| <b>Japn</b> | Japanese                                      |



|             |                                      |
|-------------|--------------------------------------|
| <b>Kor</b>  | Korean                               |
| <b>PSLD</b> | Landscape Design                     |
| <b>Latn</b> | Latin                                |
| <b>Law</b>  | Law                                  |
| <b>PSLM</b> | Law Firm Management                  |
| <b>Ling</b> | Linguistics                          |
| <b>Mgt</b>  | Management                           |
| <b>Mktg</b> | Marketing                            |
| <b>MBAd</b> | Master of Business Administration    |
| <b>Math</b> | Mathematics                          |
| <b>MAE</b>  | Mechanical and Aerospace Engineering |
| <b>Micr</b> | Microbiology and Immunology          |
| <b>PSMB</b> | Molecular Biotechnology              |
| <b>MMed</b> | Molecular Medicine                   |
| <b>MStd</b> | Museum Studies                       |
| <b>Mus</b>  | Music                                |
| <b>NSc</b>  | Naval Science                        |
| <b>OrSc</b> | Organizational Sciences              |
| <b>PSLX</b> | Paralegal Studies                    |
| <b>Path</b> | Pathology                            |
| <b>PStd</b> | Peace Studies                        |
| <b>Pers</b> | Persian                              |
| <b>Phar</b> | Pharmacology                         |

|             |   |
|-------------|---|
| <b>Phil</b> | Philosophy                                |
| <b>Phys</b> | Physics                                   |
| <b>Phyl</b> | Physiology                                |
| <b>PMgt</b> | Political Management                      |
| <b>PPsy</b> | Political Psychology                      |
| <b>PSc</b>  | Political Science                         |
| <b>Port</b> | Portuguese                                |
| <b>PsyD</b> | Professional Psychology                   |
| <b>Psyc</b> | Psychology                                |
| <b>PAd</b>  | Public Administration                     |
| <b>PubH</b> | Public Health                             |
| <b>PSPL</b> | Public Leadership                         |
| <b>PPol</b> | Public Policy                             |
| <b>PSPR</b> | Public Relations                          |
| <b>PSPB</b> | Publishing                                |
| <b>Rel</b>  | Religion                                  |
| <b>Rom</b>  | Romance Literatures                       |
| <b>SEAS</b> | School of Engineering and Applied Science |
| <b>SMPA</b> | School of Media and Public Affairs        |
| <b>PSSL</b> | Security and Safety Leadership            |
| <b>Slav</b> | Slavic                                    |
| <b>Soc</b>  | Sociology                                 |
| <b>Span</b> | Spanish                                   |

**SpEd** Special Education

**SpHr** Speech and Hearing

**Stat** Statistics

**SMPP** Strategic Management and Public Policy

**TrEd** Teacher Education

**TrDa** Theatre and Dance

**TStd** Tourism Studies

**Turk** Turkish

**Univ** University

**UW** University Writing

**Viet** Vietnamese

**WLP** Women's Leadership Programs

**WStu** Women's Studies

**Ydsh** Yiddish

### **Explanation of Course Numbers**

Courses numbered through the 100s are intended for undergraduates. Numbers up to 100 generally indicate courses for freshmen and sophomores; these courses may not be taken for credit by graduate students. Numbers in the 100s indicate courses planned for juniors and seniors; with approval of the dean and instructor, the courses may be taken for graduate credit provided that approval has been received before registering and that additional course work is assigned and completed.

Courses numbered in the 200s and 300s are intended for graduate students; the courses may be taken by qualified juniors and seniors with approval of the instructor. A few courses are

numbered in the 400s and 800s to set them apart for administrative reasons; the courses are often analogous to courses numbered in the 200s.

Courses numbered 701, 721, and 751 represent an ongoing program of curriculum innovation at GW. Courses numbered in the 770s and 780s are taught by scholars who hold appointments as University Professors. The 700 numbers do not indicate the level of difficulty.

## **ACCOUNTANCY**

*Professors* K.R. Kumar, S.H. Kang

*Associate Professors* L.G. Singleton, K.E. Smith (*Chair*), L.C. Moersen, F. Lindahl, R.L.

Tarpley

*Assistant Professors* C.L. Jones, S. Hansen, M. Sullivan, A. Gore, S. Kulp, Y. Li, Y. Xue, I.Y.

Kim, C. Zhang

*Professorial Lecturers* P. Ben-Ezra, W. Stromsem, T. Verghese, G. White, L. Schwartz, M.

Cathey, R. Kasmir, A. Lewis, M. Rogers, J. Vetting, R. Laycock

See the School of Business for the program of study leading to the degree of Bachelor of Accountancy.

### **51 Introductory Financial Accounting (3)**

Jones, Kim, Tarpley, and Staff

The fundamental concepts underlying financial statements and the informed use of accounting information. Analysis and recording of business transactions; preparation and understanding of financial statements. Measurement of the profitability and financial position of a business. Prerequisite: sophomore standing. (Fall and spring)

### **52 Introductory Managerial Accounting (3)**

Sullivan and Staff

The use of accounting information to plan and control the activities of a business. Several widely used methods of determining the cost of business activities for use in

making business decisions. The statement of cash flows. Prerequisite: Accy 51. (Fall and spring)

**110 Financial Statement Analysis (3)**

Hansen, Jones

Introduction to the analysis and interpretation of corporate financial statements within the context of a company's industry and economic environment. Cash flow analysis, profitability and risk analysis, accounting policy analysis, forecasting and performance analysis, elements of equity valuation, and decision perspectives of creditors.

Prerequisite: Accy 52. (Fall and spring)

**121 Intermediate Accounting I (3)**

Singleton

Accounting principles underlying the preparation of financial statements and their application in the measurement and reporting of selected balance sheet items and related revenue and expense recognition; accounting for receivables, inventories, fixed assets, intangible assets, and liabilities. Prerequisite: Accy 51. (Fall)

**122 Intermediate Accounting II (3)**

Singleton, Tarpley

Accounting for stockholders' equity, earnings per share, debt and equity investments, income taxes, pensions and other postretirement benefits, leases, accounting changes, statement of cash flows, financial statement analysis and disclosure. Prerequisite: Accy 51. (Spring)

**151 Business Law: Contracts, Torts, and Property (3)**

Moersen

Essential legal principles of contracts, torts, and property, including trusts and estates, leases, professional liability, and the Uniform Commercial Code. (Fall)

**152 Business Law: Enterprise Organization (3)**

Moersen

The legal aspects of organizing, financing, and operating an enterprise: agency, partnerships, corporations, securities regulation, insurance, secured credit financing, and commercial paper. Prerequisite: Accy 51. (Spring)

**161 Federal Income Taxation (3)** Smith

A study of federal income tax concepts, including what shall be taxed, and when, and at what rate. Taxable entities, income measurement, the use of different tax rates for different types of income, and the use of the tax laws to motivate taxpayer behavior to achieve economic goals. (Fall)

**171 Auditing (3)** Gore

A study of generally accepted auditing standards and accepted professional auditing practices and procedures, including reviewing and evaluating financial controls, auditing financial statements, and testing financial data of manual and automated accounting systems. Prerequisite: Accy 122. (Fall)

**181 Accounting Systems (3)** Staff

Introduction to the design and operation of accounting systems and data-management controls. Principles and applications of internal control applicable to manual and automated accounting systems. Prerequisite: Accy 122. (Fall)

**190 Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods. Prerequisite: department approval.

**192 Advanced Financial and Tax Accounting (3)** Smith

Financial and tax accounting issues relating to corporations and partnerships, including formation, operation, and liquidation of each type of entity. Financial accounting for corporate combinations. Prerequisite: Accy 121, 161. (Spring)

**193 Advanced Managerial Accounting (3)** Staff

Techniques and practices that foster an informed use of financial information for planning, resource allocation, performance evaluation, and control purposes.

Integration of concepts from other disciplines, especially economics, quantitative methods, behavioral science, and business policy and strategy. Primarily taught using case method. Prerequisite: Accy/BAdm 52. (Spring)

**196 Financial Accounting Capstone (3)** Jones

Synthesis and application of knowledge of financial accounting to specific contexts, using the perspectives of the preparer and user of financial statements. Prerequisite: senior status. (Spring)

**199 Independent Study (3)** Staff

Assigned topics. Admission by permission of the department chair. (Fall and spring)

## **AFRICANA STUDIES**

### **Committee on Africana Studies**

N. Blyden (*Director*), A. Brooks, F. Buntman, Y. Captain, E. Chapman, J. James, K. Lornell, J.A. Miller, D. Moshenberg, J. Vlach, G. Wald, A. Zimmerman

*Minor in Africana studies*—Offered through Columbian College of Arts and Sciences, the Africana studies minor provides students with an interdisciplinary and integrated course of study of Africa and the African Diaspora. The minor consists of 21 credit hours. All students are

required to take Hmn 7. The remaining courses are chosen in consultation with the director of Africana studies (a list of courses is available from the director of the program).

## **AMERICAN STUDIES**

*Professors* J.M. Vlach, R.W. Longstreth, J.A. Miller (*Chair*)

*Associate Professors* T.A. Murphy, M. McAlister, C. Heap, T. Guglielmo

*Assistant Professors* J.K. Kosek, S. Osman, E. Peña, E. Anker, J. Nash

*Professorial Lecturers* R.D. Wagner, O. Ridout, F. Goodyear, N.E. Davis, K. Ott

*Bachelor of Arts with a major in American studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—Two semesters of foreign language or placement into the third semester of a foreign language by examination; also, one course on a foreign culture, either selected from the CCAS list of foreign culture courses or as approved by the department.
3. Requirements for the major—AmSt 101, 102, 168, 169, 180, and five courses in the student's area of focus. Areas of focus are politics and culture; global connections; and space, place, and society. A list of appropriate courses for each area of focus is maintained by the department. With approval, other pertinent upper-level courses may be used, including Topics courses on appropriate subjects. At least two of the five courses in the area of focus must be cross-listed in American studies. In all cases of AmSt courses that are cross-listed with other University departments, students may register for the course in either department.

*Combined Bachelor of Arts/Master of Arts in the field of American studies*—Students interested in the dual degree program should consult the department before the beginning of the junior year.



*Special Honors*—For Special Honors in American studies, a major must meet the special honors requirements stated under University Regulations, be recommended by the faculty, and receive a grade of *A* on the senior paper written for AmSt 180.

*Minor in American studies*—Required: 18 credit hours of 100-level courses, including AmSt 167 or 168, and two 100-level U.S. history courses, one of which is focused primarily on pre-20th century and the other primarily on 20th-century material.

**50 Washington, D.C.: History, Culture, and Politics (3)**

Staff

Introduction to interdisciplinary methods of studying the contemporary city. Major problems of metropolitan life, past and present, analyzed by faculty and community leaders. Emphasis on experiential team projects.

**55 Explorations in American Culture (3)**

Staff

Exploration of different aspects of American culture depending on the topic. Consideration of various forms of American music, material culture, architecture, or other forms of expression. May be repeated for credit provided the topic differs.

**101 Early American Cultural History (3)**

Murphy

How culture was important in the creation of the United States—in its origins as a colonial outpost and its expansion across the continent; in its hierarchies and expressions of power, especially as organized by race, class, ethnicity, or gender; in the creation of democracy and the valuing of free expression; and in the development of cities and the varied uses of the countryside. Same as Hist 113.

**102 Modern American Cultural History (3)**

Kosek

The effects of culture in the shaping of the United States since 1876. The role of the mass media; effects of cultural conceptions on the physical landscape; changing ideas

of race, ethnicity, gender, and sexuality; and the political meanings of cultural conflict.

Transnational influences on U.S. culture and effects of U.S. culture abroad. Same as Hist 114.

**125 20th-Century U.S. Immigration (3)**

Guglielmo

Survey of immigration policy and immigrants' lives. How immigrants have changed the United States and how the United States has changed immigrants.

**130 Sexuality in U.S. History (3)**

Heap

Examination of the changing social organization and meaning of sexual practices and desires in American culture, with particular attention to the relationship between sexuality and gendered racial and class identities and politics. Same as Hist/WStu 130.

**139–40 Women in the United States (3–3)**

Harrison, Murphy

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as Hist/WStu 139–40.

**144 Explorations in Historical Geography (3)**

Staff

Examination of selected themes in the cultural geography of the United States over the course of its history, in relation to an overview of the historical geography of the country. Same as Geog 144.

**145 Folk Arts in America (3)**

Vlach

Ceramics, woodcarving, ironwork, decorative painting, weaving, and other crafts. Same as AH 156.

**160 Material Culture in America (3)**

Vlach

Review and analysis of the cultural messages embedded in our material surroundings.

Consideration of a range of humanly created artifacts, ranging from specific objects to vast landscapes. Same as Anth 130.

**162 U.S. Religion and Politics (3)**

Kosek

How religion and politics have influenced each other in the United States and how Americans have understood those influences. Religious violence; conflicts between faith and science; religious factors in racial and gender politics; and the separation of church and state.

**165 Introduction to Folklore (3)**

Vlach

Survey of the forms of folk expression, including verbal art, music, dance, and material culture. Examination of the materials and methods of folklore research. Same as Anth 192.

**167 Themes in U.S. Cultural History (3)**

Kosek, Osman

An examination of the special ideas, values, and modes of expression that have made American life distinctive, as revealed through a variety of sources, including fiction, popular media, photography and the arts, and material culture. May be repeated for credit provided the topic differs.

**168 Critiquing Culture (3)**

Anker, McAlister

Modes of analysis, including ethnography and other cultural studies methods, applied to examination of the interaction of cultural texts and practices with structures of power. Theories and themes central to American studies; scholarly debate about mass culture, ideology, visibility, discourse, and affect. For departmental majors; minors admitted with permission of instructor.

169 **Examining America** (3)

Osman, Peña

Modes of power and forms of identification within and across U.S. national borders.

Social constructions of the nation; forms of diversity and identity, such as race, gender, and sexuality; and the transnational flow of people, ideas, culture, and religion. For departmental majors; minors admitted with permission of instructor.

170 **The American City** (3)

Osman

An interdisciplinary introduction to the ethnic, cultural, political, and architectural landscape of the American city. Urban theory, race and ethnicity, urban history, planning and architecture, city politics, and cultural representations of the city.

171–72 **U.S. Social History** (3–3)

Stott, Guglielmo

AmSt 171: Daily life, institutions, intellectual and artistic achievements of the agrarian era, 1607–1861. AmSt 172: The urban–industrial era from 1861 to present. Same as Hist 171–72.

173 **African American History** (3)

Chapman

Same as Hist 173.

174 **Special Topics in African American History** (3)

Staff

Concentration on specific issues central to the African American experience. Consult the Schedule of Classes for issues to be addressed.

175–76 **American Architecture** (3–3)

Longstreth

Stylistic properties, form and type characteristics, technological developments, and urbanistic patterns are introduced as a means of interpretation of historic meaning.

Buildings are analyzed both as artifacts and as signifiers of social, cultural, and

economic tendencies. AmSt 175: 1600–1860; AmSt 176: 1860–present. Same as AH 154–55.

180 **Proseminar in American Studies** (3) Staff

For American studies majors. Directed research and writing on special topics. May be repeated for credit provided the topic differs.

181 **U.S. Media and Cultural History** (3) McAlister

History and analysis of 20th-century U.S. media and culture, including the rise of consumer culture, film, and television. Racial, gendered, and national identities in the context of modernism, mass culture, and globalization. Same as Hist 181.

185 **Black Women in U.S. History** (3) Chapman

Same as Hist/WStu 185.

186 **U.S. Urban History** (3) Klemek, Heap, Osman

History of American urban life and culture from the colonial era to the present, focusing on transitions from pre-industrial to industrial and post-industrial forms. The social and spatial configuration of U.S. cities, and the urban politics of race, class, and gender. Same as Hist 186.

187 **Building Cities** (3) Staff

Same as Geog 187.

192 **The American Cinema** (3) Staff

History and criticism of American films. The course enables the student to recognize and evaluate cinema techniques, to express the evaluation clearly in writing, and to understand the role of films in the context of American culture. Laboratory fee. Same as AH 157.

193 **Historical Archaeology Field Program (3)** Staff

Same as Anth 113.

194 **Historical Archaeology (3)** Staff

Same as Anth 187.

195 **Independent Study (1 to 3)** Staff

Open to a limited number of American studies majors as directed research or as an internship with a Washington museum or historical society. Approval of advisor required.

198 **Special Topics (3)** Staff

May be repeated for credit provided the topic differs. Admission by permission of instructor.

## **ANATOMY**

The Department of Anatomy and Regenerative Biology in the School of Medicine and Health Sciences offers the following courses that pertain to the secondary field in human anatomy and are available to undergraduates across the University.

130 **Human Embryology (3)**

Development of the basic organ systems; molecular control of development, congenital birth defects, and assisted reproductive technologies.

150 **Human Microscopic Anatomy (3)**

Normal histological structure of cells, tissues, and organs. Structural–functional correlates; the relationship between histological structure–function and the etiology of disease states.

160 **Human Functional Neuroanatomy (3)**

The central and peripheral nervous systems; diseases and injuries with impact on the normal structural–functional relationship.

**181 Human Gross Anatomy (3)**

Structure and function of the musculoskeletal system; regional organization, structure, and function of the major organ systems; structural organization of the head and neck.

Same as BiSc 181.

**ANTHROPOLOGY**

*University Professor* B. Wood

*Professors* A.S. Brooks, C.J. Allen (*Chair*), J.M. Vlach, D. Gow, J.C. Kuipers, B.D. Miller, R.R.

Grinker, P.W. Lucas

*Associate Professors* E.H. Cline, M. Edberg, B.G. Richmond, S.C. Lubkemann, C. Sherwood

*Assistant Professors* R.M. Bernstein, A.S. Dent, J. Blomster, R. Shepherd, P. Kelly, I. Feldman,

E. Uretsky

*Professorial Lecturers* P.J. Cressey, D.H. Ubelaker, R. Potts, J. Love, S. Johnston

*Bachelor of Arts with a major in anthropology*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Anth 1, 2, 3, and 4.
3. Required courses in other areas—(a) two-year proficiency in French, German, Russian, Chinese, or Spanish (or another language approved by the Anthropology Department); (b) 6–12 credit hours of course work in related departments approved by the advisor. Recommended for sociocultural emphasis are courses in economics, history, political science, psychology, religion, and sociology; for archaeological emphasis, courses in American studies, art history, geography,

geological sciences, and history; for emphasis in biological anthropology, courses in anatomy, biological sciences, chemistry, and physical geography; for emphasis in linguistic anthropology, courses in linguistics and in speech and hearing science. Courses in statistics are strongly recommended for all anthropology majors.

4. Requirements for the major—In addition to the four prerequisite courses, 24–36 credit hours in anthropology courses, including Anth 198 and at least one course from each of the following five categories: aspects of culture (courses in the 150s as well as 117, 121, 130, 191, 192, and 193); linguistics (the 160s); ethnology (the 170s); biological anthropology (the 140s and 5); and archaeology (the 180s and 113–116, 118, 119). Qualified seniors may enroll in 200-level courses with the permission of the instructor. See the Graduate Programs Bulletin. Up to 6 credit hours of ethnographic or archaeological field school credit may be accepted and applied toward the major, if approved by the department, and majors are encouraged to participate in such programs. Opportunities are available for field and laboratory research, both within the department and as internships in the Washington area. Credit for such work (not to exceed one-quarter of the student's total second-group credit hours in anthropology) may be granted through registration in Anth 195.

*Bachelor of Arts with a major in archaeology*—An interdepartmental major offered by the Anthropology Department in cooperation with the Fine Arts and Art History Department and the Classical and Semitic Languages and Literatures Department. The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Anth 2 and 3.



3. Required courses in other areas—12 hours or equivalent in French, Spanish, Italian, German, Arabic, Hebrew, Latin, or Greek. Since graduate study in archaeology usually involves broader preparation and requires knowledge of at least one classical and one modern language, students intending to pursue graduate study should consult with the departmental advisor as early as possible in their undergraduate program.

4. Requirements for the major—(a) Anth 118; (b) 12–15 hours of anthropological archaeology courses from the Anth 180s (one course from Anth 180, 182, 185, 188 must be included); (c) 15 hours selected from the following, with at least one course chosen from each group: AH 101–104, Hist/Clas 107–110; (d) 3–6 hours of field and laboratory work chosen from Anth 113–116, 119, 195, 286.

*Bachelor of Science with a major in biological anthropology*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Anth 1, 2, 3, and 4; BiSc 11–12.
3. Required courses—12 credit hours in biological anthropology and Paleolithic archaeology (Anth 114, 140–149, 183); 8 credit hours of approved 100-level BiSc courses; a minimum of 3 credit hours in a related natural or physical science or mathematics; 6 credit hours of sociocultural or linguistic anthropology or archaeology as listed above. The major in biological anthropology may not be pursued in conjunction with the major in anthropology.

*Combined Bachelor of Arts with a major in anthropology or archaeology or Bachelor of Science with a major in biological anthropology and Master of Arts in the field of anthropology*—Students interested in the dual degree program should consult the department before the beginning of the junior year.

*Special Honors*—For Special Honors in anthropology, archaeology, or biological anthropology, a major must meet the special honors requirements stated under University Regulations, have a grade-point average of 3.5 or better in courses required for the major, register for 3 credit hours of Anth 195, Undergraduate Research, and write a paper of special distinction arising out of a program of directed reading or research. Students must confer with an advisor before beginning the work.

*Minor in general anthropology*—21 credit hours are required, including Anth 1, 2, 3, 4, and three additional courses in anthropology, which must be taken in different subdisciplines. For the purposes of this minor, the department's courses may be divided into subdisciplines as follows: biological anthropology—courses in the 140s and 5; archaeology—the 180s and 113; anthropological linguistics—the 160s; sociocultural anthropology—all other 100-level courses, with the exception of Anth 195.

*Minor in archaeology*—18 credit hours are required, including Anth 3, 118, and four courses chosen from Anth 113, 114, 116, 180–189, 286. An independent study course in archaeology or an approved art history course may be substituted for one of the four courses.

*Minor in biological anthropology*—16 credit hours are required, including Anth 1 and 9 credits chosen from Anth 5, 141–149; an approved field or research course or an approved course or course sequence in a related field (including biological sciences, geological sciences, psychology, statistics, and certain other disciplines).

*Minor in sociocultural anthropology*—18 credit hours are required, including Anth 2; one course in ethnography (Anth 170–179); four courses in aspects of culture or methods and theory (Anth 117, 121, 130, 150–159, 191, 192, 193, 196, 198).

*Minor in cross-cultural communication*—18 credit hours are required, including Anth 2, 4, 161, 162; Anth 150 or 159; one course chosen from Anth 170–179; one course chosen from Anth 153, 154, 155, 158, 163, 168, 169, 192, or 193.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

- 1 **Biological Anthropology** (4) Richmond, Bernstein, and Staff  
Survey of human evolution, genetics and physical variation, and primatology. Regular laboratory exercises. Laboratory fee. (Fall and spring)
- 2 **Sociocultural Anthropology** (3) Grinker, Miller, and Staff  
Survey of the world's cultures, illustrating the principles of cultural behavior. (Fall and spring)
- 3 **Archaeology** (3) Cline, Blomster, and Staff  
Introduction to archaeological survey and excavation techniques and laboratory methods of dating and analysis. Brief history of archaeology and survey of world prehistory. Films and laboratory exercises. (Fall and spring)
- 4 **Language in Culture and Society** (3) Kuipers, Dent, and Staff  
Comparison and analysis of how cultures use language to communicate. The relationship of language to issues of human nature, gender, race, class, artistic expression, and power. Laboratory fee. (Spring and summer)
- 5 **The Biological Bases of Human Behavior** (4) Richmond, Bernstein  
Human behavior from an evolutionary perspective, including issues such as communication, intelligence, reproductive behavior, parental behavior, aggression, and

cooperation, and drawing on an understanding of the behavior and biology of the nonhuman primates. Laboratory fee.

**103 Myths and Mysteries in Archaeology (3)** Blomster, Johnston

Topics ranging from King Arthur to Atlantis are used to illustrate how archaeological methods and techniques can falsify—or support—exotic beliefs about the past.

**105 Introduction to Ethnomusicology (3)** Staff

Same as Mus 105.

**113 Historical Archaeology Field Program (3)** Cressey

Practical experience with a variety of excavation and laboratory techniques in historical archaeology; specific site and topics announced in the Schedule of Classes.

Same as AmSt 193. (Summer)

**114 Paleoanthropological Field Program (3 or 6)** Brooks

Intensive course on field research in paleoanthropology, including excavation methods, identification and analysis of materials, paleoecology, archaeology, and human anatomy. Conducted at selected sites in Eurasia, Africa, or Australia. Visits to comparative sites and collections in the region. (Summer)

**115 Mesoamerican Field Research (3 or 6)** Blomster

Survey, excavation, and/or laboratory analysis in Mexico and Central America. See Schedule of Classes for details. (Summer)

**116 Mediterranean Field Program (3)** Cline

Participation in archaeological field school. (Summer)

**117 Methods in Sociocultural Anthropology (3)** Edberg and Staff

Approaches to field research. Conceptual bases and biases in the delineation of problems and in the selection, analysis, and organization of data. Students design and carry out their own field projects in the Washington area. Prerequisite: Anth

2. (Spring)

**118 Theory and Practice in Archaeology (3)** Blomster, Brooks, and Staff

The primary literature in archaeology theory since the 1960s. Ethics, topical issues, and archaeological practice. Prerequisite: Anth 3. (Fall)

**119 Lab Research Methods in Archaeology (3)** Brooks, Blomster, and Staff

Research methods and techniques used by archaeologists. Emphasis on hands-on experience in one or more techniques. Prerequisite: Anth 3. (Spring, alternate years)

**121 The Anthropology of Gender: Cross-Cultural Perspectives (3)** Kelly

Same as WStu 121.

**130 Material Culture in America (3)** Vlach

Same as AmSt 160.

**140 Tropical Primate Ecology (4)** Lucas, Lill

On-campus and field study in the Atlantic Forest region of Brazil. Course fee. Same as BiSc 164. Prerequisite: Anth 148. (Spring, alternate years)

**141 Human Functional Anatomy (3)** Lucas

The anatomy of the human body, how it works, and how it differs from other animals, especially other primates. Principles and approaches of functional morphology and biomechanics and how function can be reconstructed from fossils, with special focus on the musculoskeletal system. No prior knowledge of anatomy is required. Laboratory fee. Prerequisite: Anth 1.

142 **Human Evolutionary Anatomy (3)** Richmond, Wood

The structure and function of human anatomy, as compared to our closest relatives, the great apes. Using this comparative approach, the course investigates the fossil record of human evolution, with an emphasis on reconstructing relationships, function, behavior, and adaptation in fossil hominins. Prerequisite: Anth 1. (Fall)

143 **Human Growth and Development (3)** Bernstein

Modern human growth and development considered through an evolutionary perspective. The growth stages and life cycles of modern humans, emphasizing physiological and environmental influences and comparisons with extant non-human primates and fossil hominids. Prerequisite: Anth 1. Laboratory fee. (Spring, alternate years)

145 **Forensic Anthropology Laboratory (2)** Ubelaker

Identification of human skeletal remains by body part, age, sex, race, and individual disease or trauma history; study of skeletal variation in modern and recent populations. Taught at the Smithsonian. Corequisite: Anth 146. (Spring)

146 **Human Variation (1)** Ubelaker

An overview of human variation, with special emphasis on the skeleton. Includes history of physical anthropology, individual and population variations, archaeological recovery of human remains, paleodemography, growth, paleopathology, and forensic anthropology. Prerequisite: Anth 1; corequisite for undergraduates: Anth 145. (Spring)

147 **Hominin Evolution (3)** Staff

The fossil record of human evolution, including its context. Review of the fossil evidence that concentrates on the distinctive features of each taxon. Pleistocene remains. Laboratory fee. Prerequisite: Anth 1.

148 **Primatology** (3) Lucas

Physical and behavioral characteristics of the various primate groups and their relationship to human physical and cultural evolution. Prerequisite: Anth 1. (Fall)

149 **Topics in Biological Anthropology** (3) Staff

Topic announced in the Schedule of Classes. Instructors will be drawn from GW faculty and Smithsonian Institution staff. May be repeated for credit if topic varies. Prerequisite: Anth 1.

150 **Human Rights and Ethics** (3) Shepherd and Staff

Issues of basic human rights and their violation by different cultures, states, and organizations. Genocide, ecocide, abuses on the basis of ethnicity, religion, or similar factors, and the treatment of those seeking asylum. Rights of informants and groups studied in anthropological research. Prerequisite: Anth 2. (Fall and spring)

151 **Development Anthropology** (3) Lubkemann and Staff

The impact of the world economy on nonindustrial societies. Analysis of the role of anthropology in international development programs aimed at alleviating problems in the Third World. Prerequisite: Anth 2. (Fall and spring)

152 **Cultural Ecology** (3) Staff

Basic principles of cultural ecology. Human interaction with the ecosystem both past and present; emphasis on the application of anthropological precepts to current environmental problems. Prerequisite: Anth 2 or permission of instructor.

153 **Psychological Anthropology (3)** Grinker

The cross-cultural study of the relationship between culture and personality. Topics include emotion, conceptions of the self, mental health and illness, sexuality, marriage and parenting, and cognition. Psychobiological, cultural, ecological, and psychoanalytical theories are examined. Prerequisite: Anth 2 or permission of instructor.

154 **Illness, Healing, and Culture (3)** Miller

Introduction to medical anthropology. What the record of human evolution and prehistory tells about human health; the epidemiology of health and illness; how different cultures define disease; understanding illness and healing systems cross-culturally; and the role of medical anthropology in health care and international development. Prerequisite: Anth 2 or permission of instructor.

155 **Religion, Myth, and Magic (3)** Allen and Staff

Theories of religion developed by anthropologists; survey of world religions with emphasis on non-Western societies; religious processes and change. Same as Rel 155.

156 **Politics, Ethnicity, and Nationalism (3)** Grinker

Comparative analysis of political systems; political processes, such as factionalism, styles of leadership, political ritual. Prerequisite: Anth 2 or permission of instructor.

157 **Kinship, Family, and Community (3)** Grinker

Cross-cultural analysis of how people form, maintain, and transform social groups and boundaries. Focus on how communities such as family, ethnic group, and nation are defined in moral terms. Prerequisite: Anth 2 or permission of instructor.

158 **Art and Culture (3)** Allen and Staff



The role of art in culture, with emphasis on small-scale societies; influences upon the artist, and beliefs and practices associated with art production. Prerequisite: Anth 2 or permission of instructor.

159 **Symbolic Anthropology (3)** Allen

The study of culture through the analysis of symbolic systems including myth, cosmology, folklore, art, ritual, political symbolism, and the symbolic study of kinship. Prerequisite: Anth 2 or 4 or permission of instructor.

161 **Language, Culture, and Cognition (3)** Kuipers, Dent

The role of language and culture in the organization of human experience. Beginning with debates about linguistic relativity, the course explores the way language use shapes cognition and practice in a variety of cultures and social contexts. Prerequisite: Anth 4. Laboratory fee. (Fall, alternate years)

162 **Ethnographic Analysis of Speech (3)** Kuipers, Dent

Linguistic variation and change in discourse practices; social and political correlates of linguistic interaction; recording, transcription, and analysis of verbal interaction. Prerequisite: Anth 4. Laboratory fee. (Fall, alternate years)

163 **Psycholinguistics (3)** Staff

Same as Ling 102.

168 **Language and Linguistic Analysis (3)** Kuipers

Same as Ling 101. (Spring)

169 **Special Topics in Linguistic Anthropology (3)** Kuipers and Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisite: Anth 4 or permission of instructor.

**171 North American Native Peoples (3)** Staff

Comparative study of Indian groups representative of the different culture areas of the United States and Canada. Contemporary issues involving indigenous groups, the wider society, and the state. Prerequisite: Anth 2 or permission of instructor. (Fall)

**172 Cultures of Central and South America (3)** Allen, Dent, Kelly

Culture history and ways of life in a selected region of Central or South America. Regional focus to be announced in the Schedule of Classes. Prerequisite: Anth 2 or permission of instructor.

**173 Cultures of the Pacific (3)** Love

Culture history and ways of life among native peoples of Melanesia, Micronesia, and Polynesia. Prerequisite: Anth 2 or permission of instructor.

**174 Cultures of Southeast Asia (3)** Kuipers

Introduction to the history, art, ecology, and politics of Southeast Asia. Comparison and interpretation of recent ethnographic case studies, archaeological evidence, and current political events in order to understand the diversity of Southeast Asian traditions. Prerequisite: Anth 2 or permission of instructor.

**175 Asian Ethnography (3)** Shepherd and Staff

Intensive study of the culture and history of selected peoples of East, Central, or South Asia. Specific area to be announced in the Schedule of Classes. May be repeated for credit. Prerequisite: Anth 2 or permission of instructor.

**177 Cultures of the Middle East (3)** Feldman

Geographic environment, language, religion, and social structure of settled and nomadic peoples of the Middle East; emphasis on the Arab world. Prerequisite: Anth 2. (Fall)

178 **Cultures of Africa** (3) Grinker, Lubkemann

Comparative examination of the history, cultural development, and contemporary problems of sub-Saharan African cultures. New World African cultures are also considered. Prerequisite: Anth 2 or permission of instructor.

179 **Japanese Culture Through Film** (3) Hamano

Same as Japn 162. (Spring)

180 **Power and Violence in the New World** (3) Blomster

The use of power, violence, and resistance in New World societies, examined through archaeological, ethnohistoric, and ethnographic data. Specific topic announced in the Schedule of Classes.

181 **African Roots from *Australopithecus* to Zimbabwe** (3) Brooks

The development and contributions of Africa from human beginnings through medieval states. Topics include human evolution, origins of art, technology, trade, and animal/plant domestication, rise of African states, early relations with Europe and Asia, antecedents of contemporary African diversity. Prerequisite: Anth 3 or permission of instructor.

182 **Archaeology of North America** (3) Staff

History of American archaeology; survey of North American culture history from human entry into the Americas during the Pleistocene period until the time of the first European contacts. Focus on peoples north of Mexico. Prerequisite: Anth 3.

183 **Human Cultural Beginnings** (3) Brooks

Survey of prehistory in Europe, Africa, and Asia from the earliest hominid cultures to the beginnings of agriculture. Prerequisite: Anth 3. (Fall)

184 **Old World Prehistory: First Farmers to First Cities** (3) Cline and Staff

Archaeology of the Near East, Egypt, Europe, and other areas, from the beginnings of agriculture to the rise of Babylon. Prerequisite: Anth 3. (Spring)

185 **Archaeology of Mesoamerica** (3) Blomster

Culture history of pre-Columbian societies in Middle America; the emergence of Mesoamerican civilization from the earliest hunter-gatherers and first farmers to the Aztec Empire. Prerequisite: Anth 3.

186 **Origins of the State and Urban Society** (3) Blomster and Staff

Emergence of urbanism and the state in the prehistory of different world regions. Prerequisite: Anth 3.

187 **Historical Archaeology** (3) Cressey

Survey of the basic data and methods of research in the material culture of recent history. Same as AmSt 194. (Spring, alternate years)

188 **Archaeology of Israel and Neighboring Lands** (3) Cline

The archaeology of Israel and adjacent areas (Syria, Jordan, Lebanon). Examination of many major sites and monuments. Significant problems and current debates. Same as AH 106. (Fall)

189 **Special Topics in Archaeology** (3) Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Prerequisite: Anth 3 or permission of instructor.

**190 Cultures and Diasporas in the Americas (3)** Staff

Voluntarily and forcibly displaced and resettled peoples in the Americas, including the earliest settlers, slaves, immigrants, refugees, migrant workers, illegal aliens, tourists, and others are studied in local, transnational, and global contexts. Culture change and ethnic identity formation among resettled groups; repatriation. Prerequisite: Anth 2 or permission of instructor.

**191 Anthropology in Performance (3)** Allen

Exploration of the relationships among social interaction, ritual, and dramatic performance. Improvisation workshops and discussion based on readings about non-Western cultures. Same as TrDa 140.

**192 Introduction to Folklore (3)** Vlach

Survey of the forms of folk expression, including verbal art, music, dance, and material culture, and the interaction between folk forms and popular culture. The materials and methods of folklore research. Same as AmSt 165.

**193 Ethnographic Film (3)** Kuipers and Staff

Still and motion-picture photography as an integral aspect of anthropological research. A study of recent and historic ethnographic films and an introduction to the forms and methods of making visual ethnographic records. Prerequisite: Anth 2 or permission of instructor. Material fee.

**195 Undergraduate Research (arr.)** Staff

Individual research problems to be arranged with a member of the faculty. May be repeated for credit. Prerequisite: permission of instructor.

**196 Special Topics (3)** Staff

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**197 Art and Archaeology of the Aegean Bronze Age (3)** Staff

Same as AH 104.

**198 Foundations of Anthropological Thought (3)** Allen, Kelly, Lubkemann

The development of anthropological thought in historical context. Exploration of selected basic concepts and theories of contemporary anthropology. To be taken in the junior or senior year. Prerequisite: Anth 2. (Spring)

**APPLIED SCIENCE**

Interdepartmental course offerings in the School of Engineering and Applied Science.

**1 Introduction to Engineering for Undeclared Majors (1)** Dolling and Staff

As an introduction to disciplines within SEAS, potential solutions to problems are presented by practitioners of civil and environmental engineering; computer science; electrical, computer, and biomedical engineering; mechanical and aerospace engineering; and systems engineering. (Fall)

**57 Analytical Mechanics I (2)** Haque and Staff

First half of a one-year sequence. Concepts of statics: force systems, conditions of force and moment equilibrium, simple structures, distributed forces, centroids, internal forces, friction, moments of inertia. Prerequisite or concurrent registration: ApSc 113, Phys 21. (Fall and spring)

**58 Analytical Mechanics II (3)** Chichka

Second half of a one-year sequence. Concepts of dynamics: kinematics of particles, velocity and acceleration, translating and rotating reference frames, particle dynamics,

motion under central and electromagnetic force, effect of Earth's rotation, vibrations, work, kinetic and potential energy, dynamics of systems of particles. Prerequisite: ApSc 57. (Fall and spring)

**113 Engineering Analysis I (3)**

Haque, Motevalli

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: applications of ordinary differential equations, matrices and determinants, eigenvalues and eigenvectors, systems of ordinary linear differential equations, Bessel and Legendre functions. Prerequisite or concurrent registration: Math 33. (Fall and spring)

**114 Engineering Analysis II (3)**

Kahn and Staff

Analytical methods for the solution of problems in engineering, the physical sciences, and applied mathematics: complex variables, Fourier series and integral, frequency filters, Laplace transforms, inversion and Duhamel integrals; partial differential equations. Prerequisite: Math 33. (Fall and spring)

**115 Engineering Analysis III (3)**

van Dorp and Staff

Analytical methods for the solution of engineering problems using concepts from probability and statistics: probability modeling, random variables and their distributions, mathematical expectation, sampling, point and confidence interval estimation, hypothesis testing, correlation, regression, and engineering applications. Prerequisite: Math 32; UW 20. (Fall and spring)

**116 Engineering Analysis IV (3)**

Mazzuchi and Staff

Analytical methods using advanced concepts from probability and statistics: multivariate distributions, expectation, generating functions, parametric families of

distributions, sampling and sufficient statistics, estimation, hypothesis testing, and engineering applications. Prerequisite: ApSc 115, Math 33. May be taken for graduate credit. (Fall)

**130 Materials Science (3)**

Leng and Staff

Structure of perfect and imperfect solids, thermodynamics of solids, reaction rate theory, electrons in solids, electron transport, electrical properties of junctions, magnetic materials, optical properties of materials. Prerequisite: Chem 11, Math 33, Phys 22. (Fall and spring)

**ARABIC**

See **Classical and Near Eastern Languages and Civilizations**.

**ARCHAEOLOGY**

See **Anthropology**.

**ART**

See **Fine Arts and Art History**.

**BIOLOGICAL SCIENCES**

*Professors* R.K. Packer, R. Donaldson, J.R. Burns, D.L. Lipscomb (*Chair*), K.M. Brown, J.M.

Clark, L.C. Smith, G. Hormiga

*Associate Professors* H. Merchant, D.E. Johnson, E.F. Wells, R.P. Tollo, C.A. Forster, P.

Hernandez, J.T. Lill, G. Ortí

*Assistant Professors* D.W. Morris, S.A. Church, A. Jeremic, H.G. Döbel, I. Eleftherianos

*Professorial Lecturers* P.J. Nolan, G. Mattietti

*Bachelor of Arts with a major in biology*—The following requirements must be fulfilled:

1. The general requirements stated under **Columbian College of Arts and Sciences**.



2. Prerequisite courses—BiSc 11–12 or equivalent.

3. Required courses in related areas: Chem 11–12, 151–52, and 153–54. (The following courses are strongly recommended: Phys 11–12 or 21–22; 3 credit hours of either mathematics or statistics.)

4. Required courses for the major—A minimum of 24 credit hours of 100-level courses, which must include at least 4 hours from each of the following and at least three courses with laboratory: cell and molecular biology (BiSc 102 to 109, 112), suborganismal and organismal biology (BiSc 114, 118, 120 to 142, 182), and ecology and evolution (BiSc 150 to 169).

*Bachelor of Science with a major in biology*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Prerequisite courses—BiSc 11–12 or equivalent.

3. Required courses in related areas—Chem 11–12, 151–52, and 153–54; Phys 11–12 or 21–22; 3 credit hours of either mathematics or statistics (this requirement cannot be satisfied by waiver). Two years of an approved foreign language are strongly recommended but not required.

4. Required courses for the major—A minimum of 30 credit hours of 100-level courses, which must include at least 4 hours from each of the following and at least three courses with laboratory: cell and molecular biology (BiSc 102 to 109, 112), suborganismal and organismal biology (BiSc 114, 118, 120 to 142, 182), and ecology and evolution (BiSc 150 to 169). A maximum of 6 credit hours of research and independent study in biological sciences may be used as electives within the major.

*Combined Bachelor of Science/Master of Science in the field of biological sciences*—

Interested students should consult their advisor early in the junior year.

*Special Honors*—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with special honors, a student must maintain a cumulative 3.5 grade-point average in biological sciences courses and at least a 3.0 cumulative overall grade-point average. Students who meet these criteria and wish to pursue special honors must complete an approved research project under faculty direction.

*Minor in biology*—12 credit hours of 100-level courses (excluding research and independent study).

With permission, graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Departmental prerequisite:** BiSc 11–12 or equivalent is prerequisite to all 100-level courses except by permission of the instructor.

**5 The Biology of Nutrition and Health (3)**

Döbel and Staff

A study of the human body and its disorders and diseases through examination of the essential molecules of life, nutrition, digestion, genetics, and reproduction. For non-majors. Laboratory fee. (Fall)

**6 The Ecology and Evolution of Organisms (3)**

Döbel and Staff

Introduction to ecology and evolution, including man's impact on other plants and animals, and an overview of Earth's biodiversity. For non-majors. Laboratory fee. (Spring)

**11 Introductory Biology: Cells and Molecules (4)**

Brown and Staff

Nutrition and metabolism, cellular and developmental biology, genetics, and molecular biology of plants and animals. Laboratory fee. (Fall)

**12 Introductory Biology: The Biology of Organisms (4)**

Döbel and Staff

Concepts and methods in the study of whole organisms. Evolutionary theory; population biology; diversity of plants, animals, fungi, and microorganisms; ecology and behavior; and animal structure and function. Laboratory fee. (Spring)

102 **Cell Biology** (3) Smith, Morris

Structure and function of biological molecules and cellular organelles; cellular interactions. Prerequisite: one semester of organic chemistry. (Fall and spring)

103 **Biochemistry** (4) Vanderhoek

Introduction to structures of biological macromolecules, enzyme catalysis, cellular bioenergetics, and metabolism. Prerequisite: Chem 151–52. Same as Bioc 101 and Chem 161. (Fall)

104 **Biochemistry Laboratory** (2) Vanderhoek

Study of common experimental techniques used in life science laboratories to separate and characterize biological macromolecules. Prerequisite: BiSc 103 or equivalent. Laboratory fee. Same as Bioc 103 and Chem 163. (Spring)

105 **Plant Biology** (3) Staff

Discussions of plant metabolism and molecular biology: photosynthesis, nitrogen metabolism, membrane transport, mechanisms of hormone action, protein targeting, biotechnology, and current research topics. Prerequisite: Chem 11–12. (Spring, even years)

106 **Special Topics in Biochemistry** (2) Donaldson and Staff

In-depth discussion of current biochemically relevant topics, including cancer and HIV chemotherapy, immune response, photosynthesis, signal transduction, hormone

regulation and nutrition. Topics vary. Prerequisite: BiSc 103 or equivalent. Same as Bioc 102 and Chem 162. (Spring)

107 **Genetics** (3) Johnson

Introduction to genetics, with emphasis on the integration of transmission of genetic traits and the molecular basis of gene action. Also includes cytogenetics, gene regulation, and examples of current applications of genetic technology.  
(Fall and spring)

108 **Genetics Laboratory** (1) Johnson

Study of genetic principles and genetic and molecular techniques in *Drosophila* and *E. coli*. Benchwork and comparative genomics using bioinformatics. Prerequisite or concurrent registration: BiSc 107. Laboratory fee. (Spring)

109 **Molecular Biology** (4) Eleftherianos

Overview of theories, techniques, and procedures associated with molecular biology; topics include the biosynthesis of DNA, RNA, and proteins, relationships among structure, function, and expression; and traditional and modern methods of gene and protein characterization and monitoring. Prerequisite: Chem 11–12. Laboratory fee.  
(Fall)

110 **Nanobiotechnology** (3) Jeremic

Theory and application of nanotechnologies in biology and medicine. Strategies for studying the organization, function, and complexity of biological systems at nm scale. Several areas of research are covered, including high-resolution cellular and molecular imaging, spectroscopy, and optical tweezers. Prerequisite: BiSc 102 or 103 or permission of instructor. (Spring)

111 **Nanobiotechnology Laboratory** (1) Jeremic

Overview of techniques and approaches to studying complex biological interactions at nm scale. Prerequisite: BiSc 110 or permission of instructor. Laboratory fee.

(Spring, even years)

112 **Immunology** (3) Nolan, Smith

Introduction to mammalian immunology covering the progression of immune responses from initial pathogen contact to immune memory. Applied topics include autoimmunity, transplantation, and the effects of HIV on the immune system.

Prerequisite: BiSc 102 and one semester of organic chemistry; BiSc 107 or 122 recommended. (Fall)

114 **Developmental Biology** (4) Brown

Lecture (2 hours), laboratory (4 hours). Embryonic development of animals. Principles illustrated by experimental studies of developmental problems. Laboratory exercises involve micromanipulative, biochemical, and molecular studies on animal embryos cultured in the lab. Laboratory fee. (Spring)

118 **Histology** (4) Burns

Lecture (2 hours), laboratory (4 hours). Introduction to microscopical anatomy of normal tissues and organs with emphasis on the interrelationship of structure and function. Laboratory fee. (Fall and spring)

120 **Human Neurobiology** (3) Jeremic

Introduction to the function of the human nervous system, gross and microscopic structure, and neurophysiology of the brain, spinal cord, and nerves; alterations caused by disease or injury. Prerequisite: BiSc 102 or 103. (Fall)

- 121 **Comparative Endocrinology** (3) Nolan  
Basic principles of chemical integration, neuroendocrine relationships, and mechanisms of hormone action. Prerequisite: BiSc 118 or 122. (Spring)
- 122 **Human Physiology** (3) Packer  
Introduction to the function of organ systems of the human body. Prerequisite: Chem 11–12. (Fall)
- 123 **Human Physiology Laboratory** (1) Staff  
Study of basic physiology laboratory techniques; emphasis on the experimental study of homeostatic mechanisms in humans. Prerequisite or concurrent registration: BiSc 122. Laboratory fee. (Fall)
- 125 **Environmental Physiology** (3) Packer  
Mechanisms of evolutionary adaptation and processes of acclimation by which animals respond to environmental challenges; emphasis on vertebrates. (Spring)
- 130 **Invertebrate Zoology** (4) Lipscomb  
Lecture (2 hours), laboratory (4 hours). General survey of invertebrate animals, including classification, morphology, physiology, embryology, and evolutionary relationships among phyla. Laboratory fee. (Fall)
- 132 **Comparative Vertebrate Anatomy** (4) Hernandez  
Lecture (2 hours), laboratory (4 hours). Evolution and comparative morphology of Phylum Chordata, stressing recent forms. Laboratory fee. (Spring)
- 137 **Introductory Microbiology** (4) Morris  
Lecture (2 hours), laboratory (4 hours). Survey of the major groups of microorganisms with emphasis on structure, physiology, ecology, pathogenesis, and biotechnology.

Antibiotic resistance and emerging diseases. Prerequisite: one year of chemistry.

Laboratory fee. (Fall and spring)

139 **Parasitology** (4) Hawdon

Lecture (2 hours), laboratory (4 hours). Introduction to animal parasitology; survey of parasitic types from protozoa through arthropods. Laboratory fee. (Fall)

140 **Taxonomy of Flowering Plants** (4) Wells

Lecture (2 hours), laboratory and field (4 hours). Origin, evolutionary development, and principles of systematics of flowering plants. Laboratory fee. (Spring)

142 **Flora of the Mid-Atlantic States** (4) Wells

Field trips and laboratory study of the identification and ecology of vascular plants of the Coastal Plain, Piedmont, and mountains of Delaware, Maryland, Virginia, and West Virginia. Emphasis on family characteristics and recognition of dominant species in native habitats. Laboratory fee. (Summer)

150 **Organic Evolution** (3) Lipscomb

Synthetic theory of organic evolution, including population biology, speciation, adaptation, macroevolution, systematics, biogeography, and the geologic record. (Spring)

151 **History of Life** (3) Forster

Same as Geol 151

152 **Animal Behavior** (3) Staff

An evolutionary approach to the study of animal behavior, emphasizing behavioral ecology and sociobiology. (Spring)

153 **Plant–Animal Interactions** (3) Lill

Review of the major ecological and evolutionary interactions that occur between plants and animals in natural and managed ecosystems. BiSc 150 or BiSc 154 recommended. (Fall, even years)

154 **General Ecology** (4) Merchant

Lecture (3 hours), laboratory and field (3 hours). Introduction to the concepts of limiting factors, biogeochemical cycles, trophic levels, and energy transfer and their relationship to the structure and function of population, species, communities, and ecosystems. Laboratory fee. (Fall)

155 **Plant Ecology** (4) Wells

Lecture (2 hours), laboratory (4 hours). Introduction to the ecology of plant populations, communities, and individuals. Two weekend field trips required. Laboratory fee. (Fall, even years)

156 **Animal Ecology** (4) Merchant

Lecture (3 hours), laboratory and field (3 hours). Application of ecological principles to the understanding and manipulation of animal populations. Prerequisite: BiSc 154 or permission of instructor. Laboratory fee. (Spring, even years)

157 **Aquatic Ecology** (4) Merchant

Lecture (3 hours), laboratory and field (3 hours). Ecological principles applied to aquatic systems with special references to physiochemical properties, typical habitats, and communities. Laboratory fee. (Spring, odd years)

158 **Field Botany** (4) Wells



Lecture (2 hours), laboratory and field (4 hours). Field and laboratory studies on vascular plants of the Coastal Plain, Piedmont, and mountains of the mid-Atlantic States. Two weekend field trips required. Laboratory fee. (Fall, odd years)

**159 Geobotanical Ecology of the Central Appalachians (4)** Tollo, Wells

A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Field trips. Prerequisite: Geol 1 or 5 and BiSc 13–14; or equivalent with permission of instructor. Laboratory fee. Same as Geol 159. (Spring, odd years)

**160 Conservation Biology (3)** Lill

Theory and practice of conserving biological diversity. Ecological patterns of biodiversity, biology of small populations, and conservation case studies. Use of ecological modeling software to explore various topics. Prerequisite: BiSc 154 or permission of instructor. (Spring)

**162 Plant–Animal Interactions Laboratory (1)** Lill

Field and laboratory study of temperate interactions between plants and animals. Group projects focus on original data collection, analysis, and interpretation. Prerequisite or concurrent registration: BiSc 153. Laboratory fee. (Fall, even years)

**163 Ecological and Evolutionary Genetics (3)** Church

An analysis of the ecological and genetic basis of evolutionary change. Topics include the organization and maintenance of genetic variation within and among natural populations, the genetic basis of complex traits, molecular ecology analyses, and

genotype by environment interactions. Prerequisite: BiSc 150 or permission of instructor. (Fall)

**164 Tropical Primate Ecology (4)**

Lucas, Lill

Same as Anth 140.

**171 Undergraduate Research (arr.)**

Staff

Admission by permission of the staff member concerned. May be repeated for credit.

Prerequisite: Chem 50 or 152; 16 credit hours in biological science courses.

Laboratory fee. (Fall and spring)

**172 Independent Study (2)**

Staff

Prescribed reading list and consultations with staff advisor culminating in a written report and/or examination. Prerequisite: permission of instructor.

**180 Biotechnology (3)**

Morris

Genetic engineering of bacteria, plants, and animals, including humans. Applications of modern biotechnology, especially in the field of medical biotechnology, such as gene therapy, xenotransplantation, and the Human Genome Project. Regulation, prospects, and social impact of biotechnology. Recommended: BiSc 102 or 107.

Prerequisite: organic chemistry. (Fall and spring)

**181 Human Gross Anatomy (3)**

Walsh, Slaby, Bohn

The structural organization of the human body and how it relates to regional and systems-based functions. Emphasis on the macroscopic structure of the body. Same as Anat 181. (Spring)

**182 Diversity and History of Plants (4)**

Staff

Lecture (3 hours), laboratory (3 hours). A detailed investigation of the diversity, phylogeny, morphology, and fossil history of plants for advanced undergraduates and graduate students. Prerequisite: BiSc 140 or 150 or 151 or equivalent. (Fall, even years)

**183 Biology of Proteins (3)**

Donaldson

About half of the proteins in the human genome have unknown functions. Are some related to cancers, muscle degeneration, infectious disease? How can evolutionary relationships among proteins from other organisms help us discover functions of unknown proteins? Laboratory fee. Prerequisite: AP or IB Biology or Chemistry. (Fall)

**184 Introduction to Bioinformatics (3)**

Church

An introduction to the use of computational techniques in molecular biology, genetics, and evolution. Techniques and software for database searching, sequence alignment, gene finding, phylogenetics, genomics, and proteomics. Same as CSci 144. (Spring)

**185 Lipid Biotechnology (2)**

Vanderhoek

Prerequisite: BiSc 103. Laboratory fee. Same as Bioc 104 and Chem 164.

**BUSINESS ADMINISTRATION**

Requirements for the Bachelor of Business Administration degree are listed under the School of Business. The courses listed below form the majority of the business core for the B.B.A. degree. Several of the courses are required in the B.Accy. degree program as well. BAdm courses are taught by faculty members schoolwide.

**1–2 First-Year Development Course (0–1)**

Singleton and Staff

Required of all first-year students in School of Business. This two-semester course is designed to enhance students' education and begin preparation for business careers.

The course meets periodically during the semester. Course fee. Restricted to School of Business freshmen.

**53 Management, Organizations, and Society (1.5)** Staff

Introduction to the manager and the management process in the context of organizations and society. Focus on effective management of the corporation in a changing society. (Fall and spring)

**59 International Financial Environment (1.5)** Rehman, Yang, Click

Assessment of international economic and financial environments as they affect international corporate activity. Conceptual issues and current developments in the international financial environment, including an overview of international economic systems, international financial systems, and global financial markets. Prerequisite: Econ 12. (Fall and spring)

**64 Management Information Systems Technology (3)** Granger, Duan, Zhou, Dasgupta

An introduction to data and information processing concepts and systems viewed from a contemporary management perspective. Emphasis on uses and applications as well as emerging managerial issues with the potential to reshape the form and function of information systems. Lab required. Prerequisite: basic knowledge of Microsoft Word, Excel, and PowerPoint. (Fall and spring)

**66 Organizational Behavior (3)** Bailey, Kayes

Introduction to concepts of psychology and the social dynamics that characterize organizations. Decision making, motivation, attitudes, teamwork, power, and leadership. An experiential laboratory component uses case discussions and exercises to illustrate applications of theory and concepts. Restricted to School of Business freshmen. (Fall and spring)

**76 Analysis of Business Issues (3)** Staff

Restricted to School of Business students in their sophomore year. Introduction to common language and analytic techniques. Business concepts and information resources are introduced through case analysis focusing on written and verbal communication and critical thinking skills.

**110 Basic Marketing Management (3)** Achrol, Liebrezn-Himes

Consumer and organizational buying behavior. Strategic marketing processes (market research, segmentation, targeting, positioning, and relationship-building). Product development and brand management, valuation and pricing, channel and logistics management, integrated marketing communications, e-commerce. Prerequisite: Econ 12; Stat 51. (Fall, spring, and summer)

**115 Financial Management and Markets (3)** Klock, Jostova

Introduction to financial markets, investment analysis, and financial management. Financial analysis, risk management, working capital management, capital budgeting, financial structure, cost of capital, and dividend policy. Prerequisite: Accy 51; Econ 12; Math 51, 52; Stat 51 or 53. (Fall and spring)

**120 Operations Management (3)** Perry, Bagchi, White, Matta

Production planning concepts and analytical tools. Designing and managing production processes: facilities, equipment, process control systems. Design issues, demand forecasting, material planning, acquisition techniques. Managing the factory floor: scheduling, total quality management, continuous improvement concepts and methods. Prerequisite: Stat 51. (Fall and spring)

**122 Career Management Strategies (3)** Singleton and Staff

Restricted to School of Business students in their junior year. The career development process, including job search strategies and formulation of a career management plan, with practice in producing a resume and interviewing for a position.

**130 Human Resource Management (3)** McHugh, Jensen

Global and strategic implications of human capital policies and practices, including human resource planning, recruitment, selection, training, development, compensation, and collective bargaining. Prerequisite: Econ 12. (Fall, spring, and summer)

**150 Business and Government Relations (3)** Griffin, Rivera, Beales, Starik

Economic and legal environment of business enterprise; social and political influences; contemporary problems and issues. Restricted to seniors in the B.B.A., B.Accy., and SEAS business concentration programs. (Fall and spring)

**155 Business Law and Ethics (3)** Fort

Overview of the American legal system and related ethical issues with reference to business law and the Universal Commercial Code. Key legal concepts such as contracts and torts. The role of courts: regulation, litigation, and constitution issues. (Fall and spring)

**190 Special Topics (1 to 3)** Staff

Experimental offering; new course topics and teaching methods.

**195 Internship (0)**

School of Business undergraduates may register for this course when they wish to have an internship recorded on the transcript. The supervisor must verify that the internship has been completed for a minimum of six hours per week. An administrative fee is charged. May be repeated each semester if desired.

**197 Strategy Formulation**

Davis, Thurman, Cook,

**and Implementation (3)**

Starik, Burke, Teng

An integrative capstone course to develop skills in diagnosing organizational problems, formulating and selecting strategic alternatives, and recognizing problems inherent in strategy implementation. Restricted to seniors in the B.B.A., B.Accy., and SEAS business concentration programs. (Fall and spring)

**199 Independent Study (1 to 6)**

Staff

Assigned topics with interdisciplinary focus. Admission by prior permission of advisor. May be repeated once for credit but in a separate semester.

**CHEMISTRY**

*Professors* D. Ramaker, M. King (*Chair*), A. Montaser, J.H. Miller, A. Vertes, S. Licht, J.A.

Tossell (*Research*)

*Associate Professors* M.J. Wagner, C.L. Cahill, H.H. Teng, V. Sadtschenko

*Assistant Professors* M.G. Zysmilich, L.P. Eisen, C.S. Dowd, S. Gillmor

*Instructor* J. Hilderbrandt

*Professorial Lecturers* C. Woytowicz, J.C. Zenklusen

*Bachelor of Arts or Bachelor of Science with a major in chemistry*—The department offers four undergraduate majors, all designed to give students a broad background in the basic divisions of chemistry: analytical, inorganic, organic, and physical. Major I permits a wider selection of electives to meet the needs of students preparing to enter medicine, dentistry, law, or related fields. Major II is for students preparing for graduate study in chemistry or those planning to enter the chemical profession and wishing to be certified by the American Chemical Society as having met the minimum requirements for professional training. Major III is in forensic chemistry, preparing students to meet the needs of federal and state forensic sciences laboratories. Major IV fulfills the American Chemical Society requirement for a certified degree program in chemistry with a biochemistry option.

The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses for the Bachelor of Arts degree for all majors—Chem 11–12; Chem 22 and 23; Math 31 and 32; Phys 21–22. Majors intending a Bachelor of Science degree must take two additional semesters of approved course work in the natural sciences or mathematics, such as BiSc 11–12 or Geol 1 and 5.
3. (a) Required courses for Major I—Chem 111–12, 113, 122, 134, 151–52, 153–54, 161.  
(b) Required courses for Major II—Chem 111–12, 113, 122, 123, 134, 151–52, 153–54, 161, 195 (for a total of 3 credits). A course in a structured computer programming language, such as Stat 129 or CSci 49, 50, 100, or 102, is recommended.  
(c) Required courses for Major III—Chem 111–12, 113, 122, 134, 151–52, 153–54, 161; BiSc 11–12; ForS 221, 222, 236, 238, 239.



(d) Required courses for Major IV—Chem 111–12, 113, 122, 123, 134, 151–52, 153–54, 161, 162, 163, 195; BiSc 11–12. BiSc 102, 107, and 122 are recommended.

An entering student who is considering chemistry as a major should consult a department advisor regarding the program of study for the first two years. In general, the following sequence of courses is recommended for those students considering Major II: first year—Chem 11–12, Math 31 and 32 (or 20–21 if necessary); second year—Chem 22, 151–52, and 153–54, Phys 21–22, Math 32 if not taken in first year; third year—Chem 23, 111–12, 113; fourth year—Chem 122, 123, 134, 161 (if not taken in the junior year), 195. Students in Majors I, III, and IV should follow this sequence in general and are urged to consult with the chemistry and premedical advisors concerning their academic programs.

*Special Honors*—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in chemistry must maintain a cumulative 3.0 grade-point average in chemistry courses and take Chem 195 for at least 3 credits over two semesters. In addition to the final report for Chem 195, a poster or oral presentation is required.

*Combined Bachelor of Science with a major in chemistry/Master of Forensic Sciences with a concentration in forensic chemistry*—A program leading to the B.S. in the field of chemistry and M.F.S. with a concentration in forensic chemistry is available. Interested students should consult the Chemistry Department early in the junior year.

*Minor in chemistry*—Required: Chem 11–12, 22, 23, 151–52, 153–54, and one course chosen from Chem 110, 111, 134, or 161.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

## PHYSICAL SCIENCE

**3–4 Contemporary Science for Nonscience Majors (3–3)** Zysmilich and Staff

Contemporary topics in physical, biological, and medical science. Chem 3 is not prerequisite to Chem 4. Laboratory fee. (Academic year)

## CHEMISTRY

**11–12 General Chemistry (4–4)** Hilderbrandt, Cahill, Sadtchenko, Eisen, Ramaker

Atomic structure and properties; stoichiometry; gas, liquid, and solid state; chemical bonding; solutions; chemical kinetics and equilibria; thermodynamics; acids and bases; electrochemistry; descriptive chemistry. Prerequisite to Chem 11: one year of high school algebra. Prerequisite to Chem 12: Chem 11. Laboratory fee. (Chem 11 and 12—fall and spring)

**22 Introductory Quantitative Analysis (3)** Vertes

Theory and practice of quantitative analysis by modern methods; evaluation of analytical data emphasizing detection and correction of experimental errors. Correlated with Chem 23. Prerequisite: Chem 12. (Spring)

**23 Introductory Quantitative Analysis Laboratory (1)** Hilderbrandt and Staff

Laboratory complement to Chem 22. Prerequisite or concurrent registration: Chem 22. Laboratory fee. (Fall and spring)

**105 Environmental Chemistry (3)** Miller and Staff

Chemistry and physics of the environment, with emphasis on water and air pollution; environmental analysis and modeling and their limitations. (Fall)

**110 Introduction to Physical Chemistry (3)** Gillmor

Thermodynamics, chemical and physical equilibria, kinetics, and spectroscopy.

Examples taken from biological systems. Prerequisite: Chem 11–12; Math 31; Phys 12 or 22; or permission of instructor. Not open to chemistry majors. May not be taken for credit by students who have received credit for Chem 111–12 or an equivalent course.

(Fall)

**111–12 Physical Chemistry (3–3)**

Ramaker, Wagner, Miller

Gas laws, chemical thermodynamics, chemical equilibrium, kinetics, quantum chemistry, atomic and molecular spectra, structure of solids, liquids, and macromolecules. Prerequisite to Chem 111: Chem 12; Math 31; Phys 22; or permission of instructor. Prerequisite to Chem 112: Chem 111. (Academic year)

**113 Physical Chemistry Laboratory (2)**

Miller, Wagner, Gillmor

Laboratory complement to Chem 111. Prerequisite or concurrent registration: Chem 23, 111. Laboratory fee. (Spring)

**122 Instrumental Analytical Chemistry (3)**

Montaser, Vertes

Theory of instrumental methods in qualitative and quantitative analysis, determination of structure, with emphasis on atomic and molecular spectrophotometry, infrared spectroscopy, nuclear magnetic resonance, mass spectrometry, chromatography, and electroanalysis. Correlated with Chem 123. Prerequisite or concurrent registration: Chem 111 or permission of instructor. (Fall)

**123 Instrumental Analytical Chemistry Laboratory (2)**

Wagner, Sadchenko

Laboratory complement to Chem 122. Prerequisite or concurrent registration: Chem 111 and 122. Laboratory fee. (Fall)

**134 Descriptive Inorganic Chemistry (3)**

Cahill

Intermediate-level course emphasizing the descriptive chemistry of the elements.

Prerequisite: Chem 22. (Spring)

140 **Geochemistry** (3) Teng

Same as Geol 140.

141 **Experimental Chemistry** (3) Staff

Experimental methods common to all disciplines of chemistry. Use of the chemical literature; operation of chromatographic and spectroscopic instrumentation; interpretation of spectra by correlation methods. Prerequisite: Chem 152 and 154.

Laboratory fee. (Fall and spring)

143 **Aqueous Geochemistry** (3) Teng

Same as Geol 143.

151–52 **Organic Chemistry** (3–3) King, Dowd, and Staff

Systematic treatment of the structure, preparation, properties, and reactions of the principal classes of organic compounds. Fundamental principles of stereochemistry, reaction mechanisms, and spectroscopic methods of analysis. Prerequisite to Chem 151: Chem 12. Prerequisite to Chem 152: Chem 151. (Academic year)

153–54 **Organic Chemistry Laboratory** (1–1) King and Staff

Laboratory complement of Chem 151–52. Introduction to and practice in basic skills of synthesis, separation, purification, and identification of organic compounds.

Prerequisite or concurrent registration: Chem 151–52. Prerequisite to Chem 154: Chem 153. Laboratory fee. (Academic year)

161 **Biochemistry** (4) Vanderhoek

Prerequisite: BiSc 11–12; Chem 151–52. Same as Bioc 101 and BiSc 103. (Fall)

**162 Special Topics in Biochemistry (2)** Staff

Prerequisite: Chem 161. Same as Bioc 102 and BiSc 106. (Spring)

**163 Biochemistry Laboratory (2)** Vanderhoek

Prerequisite: Chem 161. Laboratory fee. Same as Bioc 103 and BiSc 104. (Spring)

**164 Lipid Biotechnology (2)** Vanderhoek

Prerequisite: Chem 161. Laboratory fee. Same as Bioc 104 and BiSc 185.

**193 Chemical Instrumentation (3)** Montaser

Electronic analog measurements and control of electrical quantities in chemical instrumentation; digital and analog data conversion and optimization of electronic measurements in chemical instrumentation; computer interfacing and programming using PC-based systems. Prerequisite: Chem 112 and 122. Laboratory fee. (Fall)

**195 Undergraduate Research (1 or 2)** Staff

Research on problems approved by the staff. Approval must be obtained prior to registration. A final written report on the work is required. For students requesting Special Honors in chemistry, a poster or oral presentation is also required. May be repeated for credit. Majors are encouraged to take the course for two semesters.

Laboratory fee. (Fall and spring)

**CHINESE**

See **East Asian Languages and Literatures.**

**CIVIL AND ENVIRONMENTAL ENGINEERING**

*Professors* K. Mahmood, M.I. Haque, K.H. Digges (*Research*), A. Eskandarian, K. Roddis

(*Chair*), M.T. Manzari, R. Riffat

*Associate Professors* C.D. Kan (*Research*), P.F. Silva, S.S. Badie

*Assistant Professors* D. Marzougui (*Research*), S.H. Hamdar, B. Mi

*Professorial Lecturers* B. Whang, M.O. Critchfield, C. Smith, G.C. Everstine

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in civil engineering.

**1 Introduction to Civil and Environmental Engineering (1)** Roddis

An introduction to the profession of civil and environmental engineering. Field visits and laboratory exercises complement classroom instruction. (Fall)

**117 Engineering Computations (3)** Mahmood, Kaufman

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations.

Computer applications. Prerequisite: CSci 50. (Spring)

**120 Introduction to the Mechanics of Solids (3)** Haque, Eskandarian

Stress and strain, axial load problems, torsion, shear force and bending moment, pure bending of beams, shearing stresses in beams, compound stresses, analysis of plane stress and plane strain, combined stresses, deflection of beams, statically indeterminate problems, columns, energy methods. Prerequisite: ApSc 57, 113. (Fall and spring)

**121 Structural Theory I (3)** Manzari, Badie

Theory of statically determinate structures; stability and determinacy; influence lines and moving loads. Analysis of beams, frames, trusses, and arches. Calculation of deflections. Prerequisite or concurrent registration: CE 120. (Fall)

**122 Structural Theory II (3)** Manzari and Staff

Theory of statically indeterminate structures using matrix methods and classical approaches such as moment distribution and slope-deflection; influence lines; energy methods. Prerequisite: CE 121. (Spring)

**166 Civil Engineering Materials (2)** Haque, Badie, Silva

Mechanical properties and behavior of civil engineering materials such as metals, concrete, and fiber-reinforced polymer composites. Properties range from plastic deformations of metallic materials to crushing of confined and unconfined concrete. Basis of the strength of materials. Concepts of creep, fatigue, fracture, and crack propagation. Prerequisite or concurrent registration: CE 120. (Fall)

**167 Civil Engineering Materials Laboratory (1)** Silva, Haque

Measurement of stress–strain characteristics and study of failure modes in ductile steel, brittle concrete, and anisotropic composite materials. Experiments include data collection, data analysis, and interpretation and presentation of results regarding tension, compression, bending, impact, and shear properties. Prerequisite or concurrent registration: CE 166. (Fall)

**168 Introduction to Geotechnical Engineering (3)** Manzari and Staff

Soils and rock formation, soil composition, permeability, seepage and flow netanalysis, stresses in soil medium, consolidation and settlement, shear strength of soil, analysis of lateral earth pressures, soil compaction. Prerequisite: CE 120, MAE 126. (Fall)

**170 Introduction to Transportation Engineering (3)** Eskandarian, Hamdar

Basics of traffic engineering, traffic flow theory, urban transportation planning, queuing models, and mass transit. Laboratory component. Prerequisite: Math 33. (Spring)

**171 Highway Engineering and Design (3)** Eskandarian, Hamdar

Road vehicle performance. Principles of highway design: horizontal and vertical alignments, roadside design; drainage and drainage structures, earthwork, intersections, interchanges, parking facilities; basic traffic models; highway materials. Application of safety standards. Prerequisite: Math 33; prerequisite or concurrent registration: ApSc 115 and CE 120. (Fall)

**185 Geotechnical Engineering Laboratory (1)** Manzari and Staff

Laboratory experiments to evaluate liquid and plastic limits, grain-size distribution, shear strength, compressibility, permeability, and moisture–density relationship of soils. Prerequisite or concurrent registration: CE 168. (Fall)

**188 Hydraulics Laboratory (1)** Mi

Laboratory experiments and demonstrations of hydraulics in pipe and open-channel flow. Topics include center of pressure, floating bodies, Bernoulli's theorem, discharge coefficients, velocity profile, and head losses. Prerequisite or concurrent registration: CE 193. (Spring)

**189 Environmental Engineering Laboratory (1)** Riffat and Staff

Laboratory experiments for physical and chemical analyses of water and wastewater. Measurement of turbidity, alkalinity, dissolved oxygen, BOD, COD, suspended solids, and optimum coagulant dose using jar tests. Corequisite: CE 194. (Spring)

**190 Contracts and Specifications (2)** Manzari and Staff

Law of contracts, construction contracts, specifications, bidding, insurance and bonds, professional liability, arbitration of disputes, litigation. Prerequisite: junior standing (Spring)



**191 Metal Structures (3)**

Roddis

Principles of the design of metal structures, structural elements, connections, specific problems of analysis, methods of construction, professionalism in design. A design project, including the use of computer software and a detailed report, is required.

Prerequisite or concurrent registration: CE 122. (Fall)

**192 Reinforced Concrete Structures (3)**

Badie

Properties of concrete and reinforcement; design of flexural reinforcement, shear reinforcement; development of reinforcement; design of columns, floor slabs; ethics and professionalism in design. A design project, including the use of computer software and a detailed report, is required. Prerequisite or concurrent registration: CE 122. (Spring)

**193 Hydraulics (3)**

Mahmood and Staff

Fluid statics: pressure forces, buoyancy, and flotation. Application of kinematic principles; flow fields, stream tubes, and flow nets. Fluid dynamics: applications to pipe flow, hydraulic models, measurement of pressure, and velocity. Open channel flow: applications to water resources engineering. Prerequisite: MAE 126. (Spring)

**194 Environmental Engineering I:**

Riffat

**Water Resources and Water Quality (3)**

Physical and chemical analyses of water quality and characteristics. Microbiology of water and pathogens. Introduction to water treatment processes involving coagulation, flocculation, filtration, and disinfection. Prerequisite or concurrent registration: CE 193. (Spring)

**195 Hydrology and Hydraulic Design (3)**

Haque and Staff

Descriptive hydrology: hydrologic cycle, precipitation, stream flow, evaporation, and transpiration. Quantitative hydrology: hydrograph analysis, hydrographs of basin outflow, storage routing. Probability concepts in hydrology: flood frequency, rainfall frequency, stochastic hydrology. Culverts and stilling basins. Prerequisite or concurrent registration: ApSc 115, CE 193. (Fall)

**196 Design and Cost Analysis of**

Manzari, Badie, and Staff

**Civil Engineering Structures (3)**

Total structural systems concepts. Design of civil engineering structures such as piers, wharves, bulkheads, offshore platforms, dams, and other special structures. Principles of cost analysis for timber, steel, and reinforced concrete structures. Project and report are required. Prerequisite: senior status. (Spring)

**197 Environmental Engineering II:**

Riffat

**Water Supply and Pollution Control (3)**

Introduction to wastewater treatment systems including clarification, suspended and attached growth processes. Use of dissolved oxygen models. Water supply and wastewater collection systems, applied hydraulics of pipelines and pumps. Planning to meet quality needs and regulatory requirements. Prerequisite: CE 194. (Fall)

**198 Research (1 to 3)**

Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

**199 Special Topics (1 to 6)**

Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

## CLASSICAL AND NEAR EASTERN LANGUAGES AND CIVILIZATIONS

*Professor* E.A. Fisher

*Associate Professors* E.H. Cline (*Chair*), Y. Peleg

*Assistant Professors* M.D. Ticktin, M. Esseesy, E.A. Friedland, A.M. Smith II

*Teaching Instructors* S. Marcus, N. Taher, J.J. Tobkin, M.M. Kassab, S.L. Harris, R. Casteel

*Bachelor of Arts with a major in classical studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Latn or Grek 1–2, 3–4.
3. Required courses in the major—Clas 109, 110, and either AH 101 or 102, plus 24 credit hours of which at least 12 credits are 100-level Greek, Latin, or approved classical studies courses and at most 12 credits are selected from designated courses offered by the Departments of Anthropology, English, Fine Arts/Art History, History, Philosophy, Political Science, and Religion (see [www.gwu.edu/~csll/classics.htm](http://www.gwu.edu/~csll/classics.htm)). In all cases, cross-listed courses may be substituted (e.g., Clas/Hist 109).

*Special Honors*—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must (1) have attained a 3.7 grade-point average in the major and at least a 3.25 average overall by the end of the junior year, and (2) no later than the beginning of the senior year consult a departmental faculty member about a research project to be prepared under the supervision of that faculty member through Clas 185–86. Only if a committee of two faculty members approves the completed project will Special Honors be recommended; the research project must be graded *A* or *A–*.

*Minor in classical studies*—Prerequisite: Latn or Grek 1–2. The minor consists of 16 credit hours selected from Latn or Grek 3–4, 103, 104; Clas 105 through 186; Anth 116, 188, 197; AH 101, 102. In all cases, cross-listed courses may be substituted (e.g., Clas/Hist 109).

*Minor in Semitic languages and cultures*—The student chooses the minor either with an Arabic focus or a Hebrew focus. The minor consists of 15 credits in addition to prerequisite language study or demonstrated competence through the fourth semester (Arab 4 or Hebr 4) in the primary focus and through the second semester (Arab 2 or Hebr 2) in the other focus. Depending upon the focus chosen, the student completes either Arab 103, 104, and 105 or Hebr 103, 104, and 105, plus two courses chosen from Clas 100, 101, 102, 103, with at least one course in the student's chosen focus.

## **ARABIC**

**1–2 Beginning Arabic I–II (4–4)** Staff

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Arabic.

**3–4 Intermediate Arabic I–II (4–4)** Staff

Continuation of Arab 1–2. Further development of speaking, understanding, reading, and writing skills of Modern Standard Arabic. Prerequisite: Arab 1–2 or equivalent.

Laboratory fee.

**10–11 Intensive Elementary Arabic I–II (3–3)** Staff

Fundamentals of speaking, understanding, reading, and writing of Modern Arabic.

Arab 10 is prerequisite to Arab 11. Laboratory fee.

**20–21 Intensive Intermediate Arabic I–II (3–3)** Staff

Continuation of Arabic 10–11. Arab 11 is prerequisite to Arab 20; Arab 20 is prerequisite to Arab 21. Laboratory fee.

103 **Advanced Arabic** (3) Staff

Emphasis on development of speaking skills at the advanced level of proficiency.

Discussion of cultural and social issues based on a selection of contemporary written and audiovisual materials from Arab media sources. Prerequisite: Arab 4 or permission of instructor. Laboratory fee.

104 **Modern Arabic Literature** (3) Staff

Short stories, short plays, poems, formal speeches, and panel discussions in Modern Standard Arabic, with attention to linguistic and stylistic aspects. Prerequisite: Arab 103 or equivalent and permission of instructor.

106 **Media Arabic** (3) Staff

Authentic scripted and audiovisual materials from various contemporary Arab media outlets including television and radio newscast and cultural programs; newspaper and magazine articles; films and documentaries; and the Internet. Prerequisite: Arab 103 or 104 or permission of instructor.

120 **Genres in Modern Arabic Literature** (3) Staff

Historical development of short Arabic stories or short Arabic plays throughout the twentieth century. Prerequisite: Arab 104 or permission of instructor.

121 **Arabic Narratives Through the Ages** (3) Staff

Reading and discussion of narratives, such as those found in stories of *The Thousand and One Nights*, or travel adventures, such as those of Ibn Battuta and his successors. Prerequisite: Arab 104 or permission of instructor.

**190 Arabic–English Translation (3)** Staff

Theoretical background and practical applications of translation strategies from Arabic to English that are necessary for professional translation tasks. Prerequisite: Arab 104 or 106.

**191 Arabic–English Advanced Translation and Editing (1 to 3)** Staff

The professional translation and editing of various types of material. Prerequisite: Arab 190.

**GREEK**

**1–2 Beginning Classical Greek (4–4)** Staff

Study of the grammar, vocabulary, and structure of ancient Greek. Reading of selected ancient authors.

**3–4 Intermediate Classical Greek (3–3)** Staff

Reading of ancient Greek prose or poetic works (e.g., selections from Homer, Plato, Euripides). Review of grammar. Prerequisite: Grek 1–2 or equivalent.

**103–4 Major Greek Authors (3–3)** Staff

Selections from a wide variety of Greek prose, drama, and poetry, suited to the needs of the class. May be repeated for credit with permission of instructor. Prerequisite: Grek 4 or equivalent.

**HEBREW**

**1–2 Beginning Hebrew I–II (4–4)** Staff

An active presentation of Hebrew as it is spoken and written today. Comprehension, speaking, reading, and writing skills are stressed. Laboratory fee.

**3–4 Intermediate Hebrew I–II (4–4)** Staff

Further development of skills in speaking, reading, writing, and comprehension of modern Hebrew. Texts range from Israeli newspaper items to selections from classical materials. Prerequisite: Hebr 1–2 or equivalent. Laboratory fee.

**103 Hebrew Conversation and Writing (3)** Staff

Reading and writing at the intermediate to mid-high level, with stress on conversation and oral comprehension. Contemporary cultural and social aspects presented through selections from nonfiction and short fiction, films, and TV programs. Prerequisite: Hebr 4 or permission of instructor.

**104 Modern Hebrew Fiction (3)** Staff

Study of selected modern Israeli short stories and poems. Prerequisite: Hebr 103 or permission of instructor.

**106 The Israeli Media (3)** Staff

Explores the Israeli press, television and radio news broadcasts in Hebrew; focuses on developing increasing proficiency in reading and aural comprehension through class discussions and written assignments in Hebrew. Prerequisite: Hebr 103 or permission of instructor.

**120–21 Advanced Hebrew Literature (3–3)** Staff

Selections from Hebrew literature throughout the ages: Bible, Rabbinics, medieval Hebrew literature; classical motifs in modern Israeli literature. Literary analysis (writing and discussion) in Hebrew. Prerequisite: Hebr 104 or permission of instructor.

**LATIN**

**1–2 Beginning Latin I–II (4–4)** Staff

Grammatical essentials of Latin, appropriate reading selections, development of English derivatives, introduction to Roman life and literature.

**3 Intermediate Latin: Prose and Poetry (3)** Staff

Development of ability to read and understand Latin literature of moderate difficulty.

Prerequisite: Latn 1–2 or equivalent.

**4 Vergil's Aeneid (3)** Staff

Significant passages of Vergil's famous epic in Latin; reading and discussion of the entire poem in translation. Prerequisite: Latn 3 or permission of instructor.

**103–4 Major Latin Authors (3–3)** Staff

Selections from one or two major authors will be read each semester. May be repeated for credit. Prerequisite: Latn 3, 4; or permission of instructor.

**PERSIAN**

**1–2 Beginning Persian I–II (4–4)** Staff

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Persian. Laboratory fee.

**TURKISH**

**1–2 Beginning Turkish I–II (4–4)** Staff

Fundamentals of speaking, understanding, reading, and writing of Modern Standard Turkish. Laboratory fee.

**YIDDISH**

**1–2 Yiddish for Reading and Conversation (3–3)** Ticktin

Grammatical essentials of the language, appropriate reading selections, conversational exercises for beginners.



**CLASSICAL STUDIES (in English)**

**63 Ancient Medicine and Modern Medical Terms (3) Staff**

The formation of medical terms derived from Greek and Latin, along with principles that govern the derivation of their meaning. The course includes a survey of ancient medical centers and practices.

**81 Classical Islamic Literature (3) Staff**

A survey of pre-modern Islamic literature, including translations of poetry, prose, popular literature, and selections from the Quran. Topics such as mysticism, court literature, travel literature, urban mercantile literature are explored from the Arabic, Persian, and Turkish/Ottoman traditions.

**100 Modern Hebrew Literary Classics (3) Staff**

Prose and poetry of a century of writing from the beginning of the Hebrew literary renaissance to contemporary Israeli literature, including works of Bialik, Agnon, Hazaz, Amichai, Oz, and Yehoshua. Discussions stress historical development and authors' treatments of tradition and modernity.

**101 Israeli Society and Culture: Literary Perspectives (3) Staff**

A study of literature reflecting such contemporary issues as the conflict between the "builders' generation" and their children; the cultural contacts of Ashkenazim and Sefardim; image of the Arab; impact of the Holocaust; Zionist ideals and current realities.

**102 Arabic and Arab Identity (3) Esseesy**

History of the Arabic language from pre-Islamic times and its subsequent spread into contiguous regions. The role of the Arabic language in formulating the ideology of Arab nationalism and identity.

103 **Arab Film and Culture (3)** Esseesy

Historical survey of Arab cinema and its expression of Arab culture.

105 **Special Topics (3)** Staff

Topics in Arabic, Greek, Hebrew, Roman, and Yiddish literature; topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

106 **Mythology of the Classical World (3)** Staff

The creation of the world, the nature of the gods, and the adventures of heroes as described in various Greek and Roman literary sources (e.g., epic, drama, hymns) and as shown in ancient art.

107 **The Ancient Near East and Egypt to 322 B.C. (3)** Cline

Same as Hist 107.

108 **History of Ancient Israel (3)** Cline

Same as Hist 108.

109 **Early Aegean and Greek Civilizations to 338 B.C. (3)** Staff

Same as Hist 109.

110 **The Roman World to 337 A.D. (3)** Staff

Same as Hist 110.

112 **Topics in Ancient History (3)** Staff

May be repeated for credit provided the topic differs. Same as Hist 112.

113 **Greek and Roman Drama (3)** Staff

Study of Greek and Roman tragedy and comedy; the nature and setting of dramatic performance in classical antiquity.

114 **Topics in Ancient Literatures and Cultures (3)** Staff

May be repeated for credit provided the topic differs.

115 **Topics in Ancient Art and Archaeology (3)** Staff

May be repeated for credit provided the topic differs. Same as AH 105.

127 **Classical Influences in the Modern World (3)** Staff

A survey of Greek and Roman influence on the modern world, especially in architecture, language, literature, and science. Prerequisite: a course in classical literature or history.

170 **Sex and Gender in the Classical World (3)** Staff

In-depth study and discussion of readings from ancient and modern sources on women and gender difference in Greek and Roman society.

185–86 **Directed Project (1, 2, or 3)** Staff

Individual advanced reading or research, to be arranged with a member of the faculty.

May be repeated for credit. Admission by permission of instructor and department.

## **COLUMBIAN COLLEGE OF ARTS AND SCIENCES**

Columbian College Advising is a requirement for Columbian College freshmen in their first semester. A faculty member leads each section.

10 **Columbian College Advising (0)**

For entering Columbian College freshmen, providing an introduction to the liberal arts and sciences, promoting effective participation in a richly diverse academic

community, and encouraging an enlightened self-sufficiency in the selection of courses and majors. Graded on a *P/NP* basis only.

**20 Peer Writing Preceptor (0)**

Permission of the University Writing Program required for registration.

**154 Elective Internship (0 to 3)**

Fieldwork and academic work carried out under faculty supervision. Students contract with agency, faculty, and Columbian College. May be repeated to a maximum of 6 credits. Admission by permission of Columbian College. Graded on a *P/NP* basis only. Zero credit option available only during summer sessions.

**191 Special Interdisciplinary Major Capstone (3)**

Required of all students completing a special interdisciplinary major with honors.

**COMMUNICATION**

See **Organizational Sciences and Communication.**

**COMPUTER SCIENCE**

*Professors* S.Y. Berkovich, P.S. Bock, J.L. Sibert, R.S. Heller, C.D. Martin, H.-A. Choi, A.

Youssef (*Chair*), B. Narahari, J.K. Hahn, R. Simha, R. Price Jones

*Associate Professors* S. Rotenstreich, A. Bellaachia, X. Cheng, P. Vora

*Assistant Professors* M. Burke, N. Zhang, G.A. Parmer

*Professorial Lecturers* D.C. Roberts, N. Brenner, G.J. Kowalski, S.H. Kaisler, M. Happel, R.A.

Fernandez, M. Lancaster, G. Blankenship, D. Christian, S. Delahunty, D. Eisenreich, M.

Pinkerton

See the School of Engineering and Applied Science for programs of study leading to the Bachelor of Arts and Bachelor of Science with majors in computer science.

**Note:** With the exception of CSci 53 and 105, CSci courses numbered 110 and below may not normally be counted toward degree requirements for computer science majors. Credit may be earned for only one course in each of the following pairs of courses: CSci 110/147, 146/241, 162/284, 172/283, 183/232, 192/286.

**1 Computer Science Orientation (1)**

Narahari and Staff

Introduction to the field of computer science. Basic and emerging concepts and applications of computer science. Hands-on experiments and team projects. Technical resources, professional ethics, writing, and presentation. (Fall)

**10 Applications Software (3)**

Heller and Staff

Introduction to the use of microcomputer hardware and software for word processing (e.g., Word), spreadsheets (e.g., Excel), and database management (e.g., Access), with emphasis on the use of computers to solve typical problems in academia and business. (Fall and spring)

**30 Introduction to Computers and the Internet (3)**

Martin and Staff

Survey of computers and languages. Introduction to computer programming. History of computing and networking. The effects of computing and the Internet on our lives. E-commerce and new technologies. Concepts of web page design. (Fall and spring)

**33 Introduction to Internet Technology (3)**

Heller and Staff

An introductory course for non-technical students who wish to obtain a better understanding of the hardware and software that comprise the Internet. Information transfer over fiber, routing and switching of packets, methods of information transfer, protocols, software, ISP, web pages and multimedia. (Fall and spring)

**35 Introduction to Web Software Development (3)**

Martin and Staff

Introduction to the Internet. Topics include address and URL to find your way, linking to a URL, HTML and web programming, building a web page, building a home page, client-server techniques. (Fall and spring)

**49 Introduction to C Programming (3)** Martin and Staff

Structured programming with the C language. Control structures. Data types. Use of pointers. Matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Introduction to C++. Complex number representation. Corequisite: Math 20 or 31. (Spring)

**50 Introduction to FORTRAN Programming (3)** Bock and Staff

Structured programming with high-level language using FORTRAN. Control structures. Different data types with emphasis on real and complex number computations. Arrays used with vector and matrix manipulation to solve simultaneous equations. External subroutines for mathematical and graphical applications. Prerequisite or corequisite: Math 20 or 31. (Spring)

**53 Introduction to Software Development (3)** Price Jones and Staff

Introduction to the solution of problems on a digital computer using the Java language. Object-oriented programming concepts; documentation techniques; design of test data. Writing, debugging, and running programs in an interactive computing environment. (Fall)

**100 Introduction to Programming with C++ (3)** Martin and Staff

Intensive introductory course for students with a science, mathematics, or other quantitative background. Solution of numerical and nonnumerical problems on a digital computer using C++ programming language in a Unix environment.

Recommended for graduate and advanced undergraduate students in other departments. Prerequisite: Math 32 or equivalent. (Fall)

**102 Introduction to Programming with Java (3)** Simha and Staff

An introductory course in programming a computer, using the Java language. Object-oriented programming, classes, applets, methods, control structures, inheritance, overriding, widgets and the AWT package, containers, and exceptions. (Spring)

**103 Data Structures and Software Design (3)** Youssef and Staff

Data structures such as trees, lists, stacks, queues, and strings. Big-O notation and introduction to algorithm performance analysis. Solutions of numerical and non-numerical problems. Use of I/O libraries. Application development and software testing. Prerequisite: CSci 49. (Fall)

**105 Introduction to Computer Security and Information Assurance (3)** Vora and Staff

Introduction to key concepts of computer security: risk analysis, basic cryptography, operating system security, network security concepts, database security concepts. Related policy issues such as privacy and intellectual property. May not be taken for credit by computer science majors in the computer security and information assurance option. Prerequisite: CSci 53. (Fall)

**110 Technology and Society (3)** Martin and Staff

Historical, social, and ethical issues of the technological age. Ethical principles and skills and social analysis skills needed to evaluate the design and implementation of complex computer systems. Privacy, computer crime, equity, intellectual property,

professional ethics. Data collection, analysis, and presentation; technical writing and oral communication skills. (Fall)

**123 Discrete Structures I (3)** Youssef and Staff

Mathematics for computer science. Sets, functions, sequences. Propositional and predicate calculus, formal proofs, mathematical induction. Matrices, semigroups, groups, isomorphism. Relations, partitions, equivalence relations, trees, graphs. May be taken for graduate credit by students in fields other than computer science.

Prerequisite: CSci 1 or 49; Math 20 or 31. (Fall and spring)

**124 Discrete Structures II (3)** Youssef and Staff

Basic discrete techniques in computer science. Algebraic structures, vector spaces, linear transforms, norms, matrices, complex numbers, convolution and polynomial multiplication, Fourier analysis, discrete Fourier transform, number theory.

Applications to computer security, coding theory, and audiovisual signal processing.

Prerequisite: CSci 123 and Math 31. (Fall)

**133 Algorithms and Data Structures (3)** Price Jones and Staff

Object-oriented software. Inheritance, exceptions, development of classes and applets, event-driven programming. Data structures such as trees, lists, stacks, queues, and strings. Sorting and searching. Introduction to algorithm performance prediction. May be taken for graduate credit by students in fields other than computer science.

Prerequisite: CSci 53. (Spring)

**135 Computer Architecture I (3)** Narahari and Staff

Number representation, computer arithmetic, digital logic and circuit design. Computer organization, micro-architecture and processor datapath, assembly and machine



language programming. Introduction to memory organization and the hardware–software interface. Implementation of high-level language constructs. Prerequisite: CSci 133; corequisite: CSci 143. (Fall)

**136 Computer Architecture II (3)**

Narahari and Staff

Computer organization. Design of computer components and of a simple computer. Instruction set and assembly language of a pipelined RISC processor. Introduction to high-performance processors. Design of cache, main memory, and virtual memory systems. Program performance models and system performance. The I/O structure and peripherals. Prerequisite: CSci 135, 143. (Spring)

**143 Software Engineering I (3)**

Simha and Staff

Review of programming techniques and software development in one or more programming languages. Application development with GUIs, database access, threads, Web programming. Prerequisite: CSci 133. (Fall)

**144 Introduction to Bioinformatics (3)**

Price Jones and Staff

Same as BiSc 184.

**145 Programming Languages (3)**

Price Jones and Staff

Programming language and software design fundamentals. Writing programs in a non-procedural programming language. Closures; procedure and data abstraction; object-oriented, procedural, and declarative programming; continuation compilation and interpretation, and syntactic extension. Advanced control structures appropriate for parallel programming. Prerequisite: CSci 143. (Spring)

**146 Database Systems and Team Projects (3)**

Narahari and Staff

Design of relational database systems, relational query languages, normal forms, design of database applications. Team software development, integration, and testing. Professional code of ethics, intellectual property, software copyrights. Corequisite: CSci 143. (Spring)

**147 Team Project Development and Professional Ethics (3)** Martin and Staff

Development of a large software project using a team approach. User interface and interface standards. Integration and testing of modules. Social impact analysis. Professional code of ethics. Intellectual property; computer crime and hackers. Oral presentation and demonstration of the project. Prerequisite or corequisite: CSci 143 or permission of instructor. (Spring)

**148 Introduction to Biomedical Computing (3)** Hahn and Staff

A survey of the problems and solutions in biomedical computing. Application of computers in medicine. Patient care and monitoring systems, electronic medical records, digital imaging and analysis. Telemedicine, medical ethics, health care regulations and organizations. (Spring)

**152 Foundations of Computing (4)** Choi and Staff

Theoretical foundations. Formal languages and automata; regular expressions, context-free languages; finite state automata and pushdown automata; Turing machines and computability, recursive function theory, undecidability. Compiler construction. Lexical and syntax analysis; parsing and parsing techniques; lexical and parsing tools. Prerequisite: CSci 135, 143. (Fall)

**153 Algorithms (4)** Simha and Staff

Core concepts in design and analysis of algorithms, data structures, and problem-solving techniques. Hashing, heaps, trees. Graph algorithms, searching, sorting, graph algorithms, dynamic programming, greedy algorithms, divide and conquer, backtracking. Traveling salesman, combinatorial optimization techniques. NP-completeness. Prerequisite: CSci 123, 143. (Fall)

**154 Operating Systems (4)** Rotenstreich and Staff

Process management, process state, concurrent processing, synchronization, events. Operating system structure, the kernel approach, processor scheduling, task switching, monitors, threads. System management, memory management, process loading, communication with peripherals. File systems. Socket programming, packets, Internet protocols. Prerequisite: CSci 135, 143. (Fall)

**160 Theory of Computer Translators (3)** Choi and Staff

Lexical and syntax analysis, regular expressions, context-free grammars, parsing techniques, top-down parsing, efficient parsing, syntax-directed translation, intermediate formats, flow of control, block structures, procedure calls, symbol tables, run-time storage, error-detection and recovery, code optimization, code generation. Prerequisite: CSci 136, 152. (Spring)

**161 Software Engineering II (3)** Rotenstreich and Staff

Requirements definition, modularity, structured design, data and functional specifications, verification, documentation. Program design. Software tools, maintenance, project organization, design teams, quality assurance. Prerequisite or corequisite: CSci 153. (Spring)

**162 Cryptography (3)** Vora and Staff

Algorithmic principles of cryptography from Julius Caesar to public key cryptography.

Key management problems and solutions. Cryptographic systems and applications.

Prerequisite: CSci 124, 152, 153. (Spring)

**165 Pre-Capstone Design Project (1)**

Burke and Staff

The first in the sequence of three capstone design project courses. Students develop a preliminary design for their project. Requirements include architectural design, user interface specification, and formal written reports. Prerequisite: CSci 152, 153, 154. (Fall and spring)

**166 Computational Biology (3)**

Simha and Staff

Pairwise alignment and scoring. Multiple sequence alignment. Fragment assembly, physical mapping of DNA. Phylogenetic trees. Molecular structure prediction and protein folding. Microarrays and microarray data, image comparison. Clustering. Overview of biological databases, PDB, MMDB, GenBank. Draft genomes and genome browsers. Pathway databases. May be taken for graduate credit. Prerequisites: CSci 144 and 153 or 212. (Spring)

**168 Biomedical Computing (3)**

Hahn and Staff

Computing issues in epidemiology and biosurveillance, decision support, medical imaging and visualization, image-guided surgery; medical databases, issues in system integration, mobile medical computing. May be taken for graduate credit. Prerequisite: CSci 143, 148; corequisite: CSci 146. (Spring)

**171 Concepts and Applications of Computer Graphics (3)**

Hahn and Staff

Introduction to computer graphics without programming; building 3-D geometry and rendering; computer animation; virtual reality and computer games; hands-on projects

in modeling, rendering, and animation using commercial software; hands-on projects in photo and video manipulation. For students in majors other than computer science. (Spring)

**172 Computer Security (3)** Vora and Staff

Risk analysis, cryptography, operating system security, identification and authentication systems, database security. Prerequisite: CSci 154; corequisite: CSci 183. (Fall)

**173 Continuous Algorithms (3)** Simha and Staff

Overview of structures in continuous mathematics from a computational viewpoint. Main topics include continuous system simulation, computational modeling, probability, next-event simulation, algorithms for continuous optimization, machine learning, neural networks, statistical language processing, robot control algorithms. Prerequisite: CSci 123, 143. (Spring)

**174 Artificial Intelligence Algorithms (3)** Price Jones and Staff

Knowledge representation and reasoning, propositional logic and predicate calculus. Logic programming. Search, game trees, backtracking. Planning. Prerequisite: CSci 145, 153. (Spring)

**175 Information Policy (3)** Martin and Staff

Roles, issues, and impacts of computer-based information systems in national and international arenas, focusing on privacy, equity, freedom of speech, intellectual property, and access to personal and governmental information. Professional responsibilities, ethics, and common and best practices in information use. May be taken for graduate credit. (Fall)

**180 UNIX System Programming (3)** Narahari and Staff

Exposure to UNIX internals. Use of UNIX system calls and utilities in conjunction with script and C programs. RFCs, GNU project, and other collaborative traditions in the UNIX community. May be taken for graduate credit. Prerequisite: Senior status or 1 year of C programming and UNIX user experience. (Fall)

**181 Design of Computer Animation I (3)** Hahn and Staff

Use of commercial 3-D computer animation packages to create digital artistic works. Principles of animation, including timing, exaggeration of motion, and anticipation; use of a storyboard; modeling; motion; rendering and editing. Prerequisite: CSci 171. (Fall)

**182 Design of Computer Animation II (3)** Hahn and Staff

Use of commercial 3-D animation packages to create artistic works and visualizations. Process-spanning concepts of development through pre-production, production, and post-production. Emphasis on developing original content and attaining high production values. Prerequisite: CSci 181. (Spring)

**183 Computer Networks I (3)** Cheng and Staff

Higher-layer protocols and network applications on the Internet, such as session layer, presentation layer, data encryption, directory services and reliable transfer services, telnet, network management, network measurements, e-mail systems, and error reporting. Prerequisite: CSci 135, 143. (Fall)

**184 Computer Networks II (3)** Cheng and Staff

Computer networks and open system standards. Network configurations and signals, encoding and modulation, transmission media, connection interfaces, error detection

and correction, signal compression, switching, link layer control, ISDN, X.25, frame relay, ATM, and Sonet. Bridges, routers, and routing algorithms. Prerequisite: CSci 183. (Spring)

**185 Computer Graphics I (3)** Hahn and Staff

Hardware; concepts of graphics subroutine packages; programming concepts for interaction, display, and data structuring; basic clipping and scan-conversion algorithms; homogeneous coordinates; three-dimensional viewing transforms; basic rendering. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

**186 Simulation Methods (3)** Bock and Staff

Computational methods for continuous and discrete system simulation. Effects of computer software and hardware architectures on computational precision and accuracy requirements. Random-number generation and testing. Calibration and scaling technique. Verification and validation technique. Prerequisite: CSci 143. (Spring)

**187 Design of User–Interface Programs (3)** Sibert and Staff

Structure of interactive programs. Widgets, windows, and input devices. Client–server model, event-driven programming, and callbacks. Window systems (e.g., Xwindows) and dialog control. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

**188 Software Design for Handheld Devices (3)** Simha and Staff

Design of interactive software for handheld devices. Event driven programming, user interface design practices, memory management, handheld debugging techniques. May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Spring)

**189 Unix System Administration (3)**

Narahari and Staff

System administration for the stand-alone system or small networks. Installation of two or more UNIX variants (Linux, FreeBSD, Solaris) on Intel or Sparc platforms.

Configuration of mail, name services, and other network utilities. Backup and recovery, security and ethics. May be taken for graduate credit. Prerequisite: CSci

180. (Spring)

**190 Real-Time and Embedded Systems (3)**

Narahari and Staff

Development of software for real-time control of physical systems. Reliability and fault tolerance, exceptions and exception handling, reliability and concurrent processes, timeouts, deadline scheduling, shared-memory and message-based device drivers. May be taken for graduate credit. Prerequisite: CSci 143. (Spring)

**191 Computer Game Design and Programming (3)**

Hahn and Staff

Principles, techniques, and design of computer games. Graphic game engines, modeling, motion, AI and interaction; sound design and synthesis; real-time software and hardware issues. May be taken for graduate credit. (Fall)

**192 Network Security (3)**

Zhang and Staff

Security protocols and applications in local, global, and wireless networks; IPSec and packet-level communication security systems; network authentication and key-exchange protocols; intrusion detection systems and firewalls; secure network applications; network worms and denial-of-service attacks. Prerequisite: CSci

172. (Spring)

**193 Development of Open-Source Software (3)**

Staff



Design, process, tools, and culture of open-source software development. Cross-platform development and testing. Geographic dispersal, social and team dynamics, licenses (GPL, BSD, other); code reuse (modular code, shared libraries); very-large-scale distributed development techniques (CVS, Bugzilla, release-management, mailing-lists). May be taken for graduate credit. Prerequisite: CSci 143 or 210. (Fall)

**194 Discrete Analysis in Computer Science (3)** Berkovich and Staff

Combinatorial theory: permutations and combinations, generating functions, recurrence relations, the principle of inclusion and exclusion. Block designs. Applications to the analysis of algorithms, computer organization, VLSI placement, coding theory, simulation, and other problems. May be taken for graduate credit. Prerequisite: CSci 123 or permission of instructor. (Fall)

**195–96 Capstone Design Project I–II (4–4)** Burke and Staff

Planning, design, and construction of the project defined in CSci 165. Economic analysis of the project. Application of software engineering principles, including software requirements, specification, requirements engineering, reuse, documentation, verification/validation, testing, configuration management. Report writing and presentations. Prerequisite: senior status. (Fall and spring)

**197 Special Topics (1 to 3)** Staff

Topic to be announced in the Schedule of Classes. (Fall and spring)

**198 Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

**COUNSELING**

Programs in counseling are offered at the graduate level by the Graduate School of Education and Human Development through its Department of Counseling/Human and Organizational Studies. The following courses are available to undergraduates.

**162 Professional and Ethical Orientation to Counseling (3)** Staff

The roles and functions of a professional counselor and the ethical standards that govern the profession.

**163 Psychosocial Adjustment (3)** Staff

Mental health problems; emphasis on needs of counselors, teachers, and others working with children and adolescents.

**175 Introduction to Rehabilitation Counseling (3)** Staff

Overview of rehabilitation profession, including philosophy, history, ethics, theory, legislation, settings, and practice.

**178 Disability Management and Psychosocial Rehabilitation (3)** Staff

Case management services for persons with physical, mental, and emotional disabilities.

**181 Medical and Psychosocial Aspects of Disabilities (3)** Staff

Chronic and traumatic disorders; rehabilitation and psychosocial implications.

**CRIMINAL JUSTICE**

See **Sociology**.

**DANCE and DRAMA**

See **Theatre and Dance**.

**DRAMATIC LITERATURE**

Columbian College of Arts and Sciences offers an interdisciplinary program in dramatic literature leading to the degree of Bachelor of Arts. This major, which combines the strengths of the Departments of English and of Theatre and Dance, is designed to give equal consideration to the two key aspects of theatre—the literary text and the production.

*Bachelor of Arts with a major in dramatic literature*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—A two-course sequence chosen from Engl 51–52, 61–62, 71–72, 73–74, 91–92; or Hmn 1, 2; or Honr 15, 16.
3. Required courses for the major (45 credit hours):
  - (a) Engl 120, 127–28; Engl/TrDa 124; TrDa 145–46.
  - (b) 12 credit hours in drama courses or related topics selected from Clas 113; Engl 105, 108, 155–56, 158, 165–66; Mus 121; Fren/Span 132.
  - (c) 12 credit hours in performance and production courses in the Department of Theatre and Dance, including TrDa 14, 130, 147.
  - (d) 3 credit hours of a senior capstone experience in dramaturgical practice through one of the following: TrDa 196, 198, 199; Engl 197, 198, 199.

## **EARLY MODERN EUROPEAN STUDIES**

### **Committee on Early Modern European Studies**

J.G. Harris (*Chair*), L. Chang, I. Creppell, H. Dugan, P. Jacks, R.E. Kennedy, Jr., D. Khoury, M.

Norton, L. Peck, D. Wallace, L. Westwater, L. Youens

Columbian College of Arts and Sciences offers an interdisciplinary program in early modern European studies. The program is designed to enhance the student's understanding of the history,

culture, politics, philosophy, religion, science, literature, and art of the five centuries (1300–1800) during which the Western world began to take on some of its modern dimensions.

*Bachelor of Arts with a major in early modern European studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite—four semesters of study, or the equivalent, in a modern European language or Latin.
3. Requirements for the major (all courses are to be chosen in consultation with the advisor):
  - (a) 6 credits chosen from AH 120, 121; Hist 123; PSc 106; Rel 145.
  - (b) 18 credits, consisting of two sets of 9 credits selected from two of the following four groups: Group A—Fren 53, 121, 122, 123; Ger 91, 171, 195; Ital 53, 120, 197; Span 53, 121, 122, 123; Group B—AH 120, 121, 122, 123, 131, 132, 140; Mus 126; Group C—Engl 125, 127–28, 130, 131–32, 153, 155, 172; Clas 127; Group D—Hist 123, 141, 148, 151, 153, 154, 193.
  - (c) 6 credits chosen from the entire set of courses listed above or from approved departmental Special Topics or Independent Study courses.

*Minor in early modern European studies*—Requirements: four semesters of study in a modern European language, or three semesters of Latin, or the equivalent; AH 120 or 121; one course chosen from Hist 123, PSc 106, or Rel 145; two additional courses chosen from 3(b) above.

## **EAST ASIAN LANGUAGES AND LITERATURES**

*Professors* J. Chaves, Y.-K. Kim-Renaud (*Chair*), S. Hamano

*Assistant Professors* I.L. Hanami, P.N. Zhang, H. Dong (*Teaching*)

*Teaching Instructors* M.D. Pak, T. Tsujioka, M. Wei

*Professorial Lecturers* J. Finch, M. Frost

*Lecturers* H.V. Pham, W.K. Cavanaugh, Y. Kang, M. Sato

*Bachelor of Arts with a major in Chinese language and literature*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Chin 1–2, 3–4; or equivalent.
3. Required for the major—Chin 105–6, 107–8, 109–10, 111–12, and 12 additional credit hours of 100-level Chinese courses; plus 6 hours in related 100-level courses outside the program, as approved by the program advisor.

*Bachelor of Arts with a major in Japanese language and literature*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Japn 1–2, 3–4; or equivalent.
3. Required for the major—Japn 105–6, 109, 111–12, and 18 additional credit hours of 100-level Japanese courses; plus 9 hours in related 100-level courses outside the program, as approved by the program advisor.

*Minor in Chinese language and literature*—Prerequisite: Chin 1–2, 3–4; or equivalent. The minor consists of Chin 105–6 and 12 additional credit hours of 100-level Chinese courses.

*Minor in Japanese language and literature*—Prerequisite: Japn 1–2, 3–4; or equivalent. The minor consists of Japn 105–6 and 12 additional credit hours of 100-level Japanese courses.

*Minor in Korean language and literature*—Prerequisite: Kor 1–2, 3–4; or equivalent. The minor consists of Kor 105–6 and 12 additional credit hours of 100-level Korean courses.

## **CHINESE**

- 1–2 **Beginning Chinese I–II** (4–4) Staff  
Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee. (Academic year)
- 3–4 **Intermediate Chinese I–II** (4–4) Wei and Staff  
Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee. (Academic year)
- 88 **E-learning Tools for Chinese** (1) Zhang  
Basic training for using computer programs, software, or web tools for Chinese word processing. Prerequisite: Chin 1. Laboratory fee. (Spring)
- 105–6 **Advanced Chinese I–II** (3–3) Staff  
Continuation of reading of texts, essay writing practice, and oral presentation and discussion. Prerequisite: Chin 4 to 105, Chin 105 to 106. Laboratory fee.  
(Academic year)
- 107–8 **Readings in Modern Chinese** (3–3) Staff  
Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Chin 106 or equivalent. (Academic year)
- 109–10 **Introduction to Classical Chinese** (3–3) Chaves  
Introduction to classical writings in Chinese literature, history, and philosophy.  
Prerequisite: Chin 4 or equivalent. (Academic year)
- 111–12 **Chinese Literature in Translation** (3–3) Chaves  
An introductory course focusing on major works of poetry, drama, and the novel in their historical and social context. (Academic year)
- 121–22 **Advanced Conversation and Composition I–II** (3–3) Zhang and Staff

Productive skills at the extended discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: Chin 106 to 121, Chin 121 to 122, or permission of instructor. (Academic year)

123–24 **Introduction to Chinese Linguistics (3–3)** Staff

Introduction to the history of the Chinese language. Analysis of linguistic structure of modern spoken Chinese and classical Chinese. Lectures and discussion in English.

Prerequisite: Chin 4 or equivalent. (Alternate academic years)

136 **Chinese Women in Myth, Literature, and Film (3)** Frost

Women's position in Chinese cultural and political life from prehistoric myth to the present time. Confucian writing, traditional theatre, and films and novels set in China.

A general survey of Chinese history establishes the context for discussions of cultural and political phenomena, such as foot binding and the one-child policy. Same as WStu 136. (Spring)

162 **Chinese Culture Through Film (3)** Frost

Survey of the Chinese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Lectures and discussion in English. (Fall and spring)

171–72 **Poetry of the Tang and Song Periods (3–3)** Chaves

Reading of works of leading poets. Discussion of content and style. Prerequisite: Chin 109 or equivalent. (Alternate academic years)

179–80 **20th-Century Chinese Literature (3–3)** Staff

Selected works of major 20th-century writers, including Lu Xun, Lao She, Chen Ruoxi, Bai Xianrong, and others. Prerequisite: Chin 107 or equivalent.

(Alternate academic years)

185–86 **Directed Reading (3–3)** Staff

Reading of material in the student's field of interest. Admission by permission of instructor. (Academic year)

198–99 **Proseminar: Readings for the Major** Staff

**in Chinese Language and Literature (3–3)**

Recommended for all majors. Preparation for advanced research in Chinese sources.

One-on-one tutorials, seminar meetings, and practice in consulting Chinese reference works, both traditional and modern. Literary criticism; keeping abreast of sinological scholarship. Prerequisite: Chin 106 to 198, Chin 198 to 199. (Academic year)

## JAPANESE

1–2 **Beginning Japanese I–II (4–4)** Hamano, Tsujioka

Fundamentals of grammar and pronunciation, with graded reading and practice in writing. Laboratory fee. (Academic year)

3–4 **Intermediate Japanese I–II (4–4)** Hamano, Tsujioka

Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee. (Academic year)

5 **Intensive Beginning Japanese (8)** Staff

Intensive beginning course equivalent to Japn 1–2. Laboratory fee.

6 **Intensive Intermediate Japanese (8)** Staff

Intensive intermediate course equivalent to Japn 3–4. Laboratory fee.

105–6 **Advanced Japanese I–II (3–3)** Staff



Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Japn 4 to 105, Japn 105 to 106. Laboratory fee. (Academic year)

107–8 **Readings in Modern Japanese (3–3)** Hanami

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Japn 106 or equivalent. (Academic year)

109 **Introduction to Bungo, Literary Japanese (3)** Hanami

Introduction to Bungo, the literary Japanese used in official government documents up to World War II, newspapers and journals through the Meiji period, and literature from the prose of the Tales of Ise to the poetry of Tawara Machi. Prerequisite: Japn 106. (Fall)

110 **Readings in Classical Japanese (3)** Hanami

Readings in premodern texts in Japanese literature, history, and philosophy. Prerequisite: Japn 109. (Spring)

111–12 **Japanese Literature in Translation (3–3)** Hanami

An introductory survey of traditional and modern Japanese literature read in English translation: love and nature poetry; theater (classical drama, puppet plays); fiction; diaries. (Academic year)

121–22 **Advanced Conversation and Composition I–II (3–3)** Staff

Productive skills at the extended discourse level, topic-specific practice of commonly used speech patterns and writing formats. Prerequisite: Japn 106 to 121, Japn 121 to 122. (Academic year)

162 **Japanese Culture Through Film (3)** Hamano

Survey of the Japanese cultural heritage presented through films. Topics include literature, philosophy, art, religion, and social history from prehistorical times to the modern era. Lectures and discussion in English. (Fall and spring)

185–86 **Directed Reading (3–3)**

Hanami and Staff

Reading of material in the student's field of interest. Admission by permission of instructor. (Academic year)

198–99 **Proseminar: Readings for the Major**

Hanami, Hamano

**in Japanese Language and Literature (3–3)**

Recommended for all majors. Preparation for advanced research in Japanese sources. Practice in consulting Japanese reference material and translating sources for writing in English. Seminars on advanced reading, translation, and critical methodology. Prerequisite: Japn 106 to 198, Japn 198 to 199. (Academic year)

**KOREAN**

1–2 **Beginning Korean I–II (4–4)**

Pak

Fundamentals of grammar and pronunciation, with graded speaking, reading, and writing practice. Laboratory fee. (Academic year)

3–4 **Intermediate Korean I–II (4–4)**

Pak

Continuation of grammar, with emphasis on speaking, reading, and writing. Laboratory fee. (Academic year)

105–6 **Advanced Korean I–II (3–3)**

Pak

Continuation of reading of texts, writing of short pieces, conversation, systematic review of grammar. Prerequisite: Kor 4 to 105, Kor 105 to 106. Laboratory fee. (Academic year)

107–8 **Readings in Modern Korean** (3–3) Staff

Readings in selected modern literary works, social science materials, and documentary materials. Prerequisite: Kor 106 or equivalent. (Academic year)

111–12 **Korean Literature in Translation** (3–3) Kim-Renaud

An introductory survey of Korean literature read in English translation. Kor 111: traditional poetry, fiction, storytelling, drama, diaries. Kor 112: modern fiction, drama, poetry, essays. (Academic year)

162 **Korean Culture Through Film** (3) Finch

The intersection of gender, class, and nation in contemporary society through the lens of Korean film. English subtitles; lectures and discussion in English.  
(Fall and spring)

**VIETNAMESE**

1–2 **Beginning Vietnamese I–II** (4–4) Staff

Fundamentals of grammar and pronunciation, with an introduction to reading and writing. (Academic year)

3–4 **Intermediate Vietnamese I–II** (4–4) Staff

Continuation of grammar, with emphasis on speaking, reading, and writing. (Academic year)

**EAST ASIAN LANGUAGES AND LITERATURES**

75 **East Asian Calligraphy** (3) Staff

Writing of Chinese characters with traditional writing implements. No knowledge of the language required. Covers the history, aesthetics, and philosophy of East Asian scripts and calligraphy and their relationships to paintings, seal carving, and literature.  
Same as FA 75. (Fall and spring)

**182 Religion and Philosophy in East Asia (3)** Staff

Same as Rel 182.

**183 Confucian Literature in East Asia (3)** Staff

Same as Rel 183.

**184 Religion and Ethics in East Asia (3)** Staff

Same as Rel 184.

**185 Daoism in East Asia (3)** Staff

Same as Rel 185.

**186 Shamanism in East Asia (3)** Staff

Same as Rel 186.

**197 Independent Study (1 to 3)** Staff

Departmental approval is required to register.

## **ECONOMICS**

*Professors* J.L. Gastwirth, R.S. Goldfarb, A.M. Yezer, J.J. Cordes, J. Pelzman, R.P. Trost, B.L.

Boulrier, H.S. Watson, M.D. Bradley, S.C. Smith, P. Labadie, G.L. Kaminsky, D.O. Parsons,

R.F. Phillips (*Chair*), M.O. Moore, N. Vonortas, F.L. Joutz, S. Joshi, A.S. Malik, J.E. Foster

*Associate Professors* S.M. Suranovic, W.P. Mullin, V. Fon, R.M. Samaniego, M. Cipriani

*Assistant Professors* C. Wei, S. Emran, M.X. Chen, A. Fostel, T. Sinclair, P. Carrillo, S.

McCoskey

*Professorial Lecturers* S.N. Kirby, R.S. Belous, D. Fixler, H. Hertzfeld, H. Stekler, F.D. Weiss,

L. Clauser, N. Pham

*Bachelor of Arts with a major in economics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Prerequisite courses—Econ 11–12.

3. Required courses in related areas—Math 21, 31, or 52; Stat 111 and 112, or equivalent; 6 credit hours of a social science other than economics.

4. Required courses in the major—Econ 101, 102, 121, 198, and five additional 100-level economics courses to be approved by the departmental advisor. A maximum of three regional courses (Econ 133, 169, 170, 185) can be counted toward the five additional courses. Of the three international courses (Econ 180, 181, and 182), only two may be counted toward the major.

*Bachelor of Science with a major in economics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Prerequisite courses—Econ 11–12.

3. Required courses in related areas—Math 31 and 32, or equivalent; Stat 111 and 112, or equivalent; 6 hours of additional course work in mathematics, statistics, systems engineering, or computer science, to be approved by the departmental advisor (e.g., Math 33, 124, 125, 142; Stat 157, 158, 181, 183; EMSE 101, 102, 154, 173; CSci 123, 173, 174, 194).

4. Required courses in the major—Econ 101, 102, 121, 123, 198, and four additional 100-level economics courses to be approved by the departmental advisor. A maximum of three regional courses (Econ 133, 169, 170, 185) can be counted toward the four additional courses. Of the three international courses (Econ 180, 181, and 182), only two may be counted toward the major.

*Combined Bachelor of Science/Master of Arts in the field of economics*—Students interested in this dual degree program should consult the undergraduate program advisor in the Economics Department by the second semester of the sophomore year.

*Combined Bachelor of Arts or Bachelor of Science with a major in economics and Master of Public Policy*—Students interested in this dual degree program should consult the director of the Public Policy Program by the second semester of their sophomore year.

*Special Honors*—Students may apply for graduation with Special Honors. To be eligible, a student must meet the requirements for Special Honors stated under University Regulations, must have a grade-point average of at least 3.5 in economics courses, and must submit an honors paper to the department. Upon review of the honors paper, the student may be recommended for graduation with Special Honors.

*Minor in economics*—(a) 18 credit hours in economics, including Econ 11–12, 101, 102, 121, and one other approved 100-level course in economics; (b) one of the following: 6 credit hours of an approved statistics sequence, such as Stat 111, 112; or 6 hours of an approved mathematics sequence, such as Math 31, 32; or one approved statistics course, such as Stat 111, and one approved mathematics course, such as Math 31 or 52; or one approved mathematics course or one approved statistics course and one additional 100-level course in economics (other than Econ 133, 169, 170, or 185). Stat 129 cannot be used to satisfy the requirements of the minor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Departmental prerequisite:** Econ 11–12 is prerequisite to all other courses offered by the Department of Economics.

**11–12 Principles of Economics (3–3)**

Bradley, Trost, Samaniego, Suranovic, Yezer

Major economic principles, institutions, and problems in contemporary life. Econ 11: Microeconomics—supply and demand, the price system and how it works, competitive and monopolistic markets. Econ 12: Macroeconomics—national income concepts,

unemployment and inflation, institutions of monetary control. Econ 11 is prerequisite to Econ 12. (Econ 11 and 12—fall and spring)

**101 Intermediate Microeconomic Theory (3)**

Fon, Goldfarb, Joshi, Malik,

Parsons, Watson, Carrillo

Analysis of household economic behavior, including derivation of demand functions.

Analysis of firm behavior, including derivation of supply frameworks. Demand and supply interaction under various market structures and in factor markets. (Fall and spring)

**102 Intermediate Macroeconomic Theory (3)**

Bradley, Joutz, Labadie,

Sinclair, Wei

Investigation of the determinants of national income, inflation, unemployment, and interest rates. Alternative business cycle theories, with emphasis on the role of imperfect information, uncertainty, and expectations. (Fall and spring)

**105 Economic Conditions Analysis and Forecasting (3)**

Staff

Theory and empirical analyses of economic trends and fluctuations; use of economic indicators and simple econometric models. (Fall)

**121 Money and Banking (3)**

Joutz, Labadie, Samaniego, Wei

The role of money, credit, interest rates, foreign exchange rates, and commercial banks and other financial institutions in the U.S. economy. (Fall and spring)

**122 Monetary Theory and Policy (3)**

Staff

Analysis of classic and modern monetary theories and their application to current economic conditions. The links between theory and policy. The altered role of money over time; the new money technology. (Spring)

**123 Introduction to Econometrics (3)** Trost, Phillips, Sinclair

Joint offering of the Economics and Statistics Departments. Construction and testing of economic models: regression theory, parameter estimation, and statistical techniques applicable to economic models. Prerequisite: Math 31 or equivalent; Stat 112 or equivalent. (Fall and spring)

**133 Economies of the Former Soviet Union and Eastern Europe (3)** Staff

Analysis of the transition process in the former Soviet Union and Eastern Europe.

Topics include economic models of planned economies and comparative analysis of economic development programs of the newly independent states and Eastern Europe. (Fall)

**135 Microeconomic Public Policy Analysis (3)** Goldfarb

How microeconomic analysis can be used to analyze a variety of public policy issues.

Background on economic public policy analysis precedes analysis of various public policy issues that may include taxation of harmful products like cigarettes, government price discrimination policy, vaccination policy, and occupational shortages. (Spring)

**136 Natural Resources and Environmental Economics (3)** Malik

Analysis of market mechanisms that allocate energy and natural and environmental resources; investigation of actual and optimal resource allocation across uses and time; review of arguments for public intervention. (Spring)

**142 Labor Economics (3)** Parsons

Analysis of labor supply and demand; measurement and theory of unemployment; occupational choice; wage differentials; labor market issues and policies. (Fall)

**148 Health Economics (3)** Staff



Economic analysis of the determinants of demand, supply, output, and distribution in the health care sector, with special emphasis on current policy issues of access, quality, and cost. (Spring)

**151 Economic Development (3)** Smith, Emran

Theories and empirical studies of the economic problems of developing countries. (Fall and spring)

**157 Urban and Regional Economics (3)** Yezer, Carrillo

Analysis of the determinants of urban growth and development; firm location; the functioning of urban land and housing markets.

**158 Industrial Organization (3)** Mullin

Analysis of market structure, conduct, and performance of firms in a market economy, with emphasis on case studies of U.S. industries. (Fall)

**159 Government Regulation of the Economy (3)** Mullin

Economic analysis of antitrust and regulation in the American economy. Prerequisite: Econ 101 or 158. (Spring)

**161 Public Finance: Expenditure Programs (3)** Cordes, Watson

Economic analysis of government spending and social regulation programs. Topics include public goods, externalities, income transfer and social insurance programs, and benefit–cost analysis of government programs. (Fall)

**162 Public Finance: Taxation (3)** Cordes, Watson

Economic analysis of taxes. Topics include individual and corporate income taxes, payroll taxes, sales and excise taxes, property and wealth taxes, design of tax systems, and effects of taxation on labor and capital markets. (Spring)

- 165 **Economics of Human Resources** (3) Boulier  
Economic analysis of education and training, labor market discrimination, marriage and the family, and social security. (Fall)
- 167 **Economics of Crime** (3) Yezer  
Analysis of crime, both empirical and theoretical, that examines the links between law and economics, the economics of criminal participation, and the economics of law enforcement. (Spring)
- 169 **Introduction to the Economy of China** (3) Staff  
Background, organization, and operation of the economy. Appraisal of performance and analysis of problems of development. (Fall)
- 170 **Introduction to the Economy of Japan** (3) Staff  
Analysis of the structure and growth of the Japanese economy. (Spring)
- 180 **Survey of International Economics** (3) Fostel, Moore, Suranovic  
Basic concepts of international trade and international finance, with emphasis on policy issues.
- 181–82 **International Economics** (3–3) Moore, Suranovic, Pelzman,  
Chen, Fostel, Cipriani  
Econ 181: International trade theory and policy. Econ 182: International macroeconomic theory and policy. (Academic year)
- 185 **Economic History and Problems of Latin America** (3) Staff  
Analysis of present structures and problems of Latin American economies.
- 190 **Law and Economics** (3) Pelzman, Fon

An introduction to the economic analysis of legal systems. How laws alter behavior and how laws might be designed to satisfy efficiency and fairness criteria. Prerequisite: Econ 101.

191 **Game Theory** (3) Joshi, Fon

An introduction to game theory, covering concepts such as Nash equilibrium, evolutionary games, backward induction and subgame perfection, Bayesian–Nash games of imperfect information, adverse selection, and moral hazard. Prerequisites: Econ 101; Math 21, 31, or 52 or equivalent. (Fall and spring)

195 **Special Topics** (3) Staff

Topics vary, depending on current issues of interest and faculty availability.

198 **Proseminar** (3) Boulier, Bradley, Fon, Goldfarb, Parsons, Suranovic, Watson

Preparation and presentation of a research paper in any field of economics agreed upon by student and instructor. Review of selected topics in contemporary economics. Open only to economics majors in their senior year.

199 **Independent Research** (3) Staff

Prerequisite: Completion of 12 hours of 100-level economics courses, including Econ 101 and 102, with a minimum grade-point average of 3.4; and approval of an independent research project by a faculty member of the Economics Department.

## **EDUCATIONAL LEADERSHIP**

Programs in educational leadership are offered at the graduate level by the Graduate School of Education and Human Development. The following courses are open to undergraduates.

104 **Psychology for Learning and Teaching** (3) Staff

Principles, theory, nature, and course of learning and teaching processes. Examination and analysis of the strategies and dynamics of teaching and learning in behavioral settings. Thirty hours of fieldwork in an educational setting. (Fall and spring)

**125 Museums as Cultural and Educational Resources (3)** Staff

A general introduction to museums as institutions, sources of information, and places for enjoyment. Classes take place on campus and at museums in the metropolitan area.

Admission by permission of instructor. (Spring)

**ELECTRICAL AND COMPUTER ENGINEERING**

*Professors* W.K. Kahn, H.J. Helgert, R.H. Lang, N. Kyriakopoulos, T.N. Lee, E. Della Torre, R.J. Harrington, W. Wasylkiwskyj, M.H. Loew, R.L. Carroll, Jr., M.E. Zaghoul (*Chair*), M. Pardavi-Horvath, B.R. Vojcic, K.B. Eom, C.E. Korman, T. El-Ghazawi, L. Bennett (*Research*), T.J. Manuccia, S. Subramaniam

*Associate Professors* M. Doroslovacki, J.M. Zara, S. Ahmadi (*Teaching*)

*Assistant Professors* M.W. Kay, V. Zderic, M. Li, G.P. Venkataramani, H.H. Huang

*Adjunct Professors* A. Schneider, D. Smith

*Professorial Lecturers* L.J. Ippolito, M.R. Berman, M.L. Picciolo, I. Martinez, S. Hussein, A. Mehrotra, J. Myklebust, A. Veronis, D. Nagel

*Lecturers* C. Wu, S. Zhang, K. Kern

See the School of Engineering and Applied Science for programs of study leading to the Bachelor of Science with majors in electrical engineering, computer engineering, and biomedical engineering.

**1–2 Introduction to Electrical, Computer, and Biomedical Engineering (1–1)** Korman and Staff

Basic and emerging concepts in electrical, computer, and biomedical engineering. Hands-on experiments and projects. Introduction to the professional literature and available resources and to technical writing, speaking, and presentation skills. (Academic year)

**11 Circuit Theory (4)**

Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Circuit elements, techniques of circuit analysis; circuit theorems; operational amplifiers; RLC circuits; natural and step responses; series, parallel and resonant circuits; sinusoidal steady-state analysis; phasers; power calculations; transformers; two-port circuits. CAD tools used in circuit projects.

Corequisite: ApSc 113, Phys 22. (Fall and spring)

**12 Circuits, Signals, and Systems (3)**

Kyriakopoulos and Staff

Circuit analysis using Laplace transforms; transfer functions; poles and zeroes; Bode diagrams; effects of feedback on circuits; convolution; Fourier series and Fourier transforms; design of filters; CAD tools used in design of projects. Prerequisite: ECE 11, 117. (Fall and spring)

**20 Engineering Electronics (4)**

Korman and Staff

Lecture (3 hours), laboratory (3 hours). Solid-state devices used in electronic engineering. Physics of their operation. Application to electronic circuits. Primary emphasis on application of these elements in power supplies and in linear amplifiers. Design concepts through use of SPICE and graphical techniques. Prerequisite: ECE 11. (Fall and spring)

**30 Introduction to Electromagnetics (3)**

Lang and Staff

Maxwell's equations, pulse propagation in one dimension, transmission line equations, reflection coefficient, capacitance and inductance calculations, Smith chart, plane waves, reflection from a dielectric of fiber and integrated optics. Prerequisite: ApSc 113, Phys 22. (Spring)

**31 Fields and Waves I (3)**

Kahn and Staff

Complex phasor notation, uniform transmission lines, standing wave ratio, power, reflection coefficient, impedance matching. Review of vector analysis and numerical methods. Electrostatics, generalizations of Coulomb's law, Gauss's law, potential, conductors, dielectrics, capacitance, energy. Prerequisite: ApSc 113; Phys 22. (Spring)

**32 Fields and Waves II (3)**

Kahn and Staff

Magneto-stationary fields, Lorentz force torques, Biot-Savart law, Ampere's law, magnetic materials, inductance, energy. Maxwell's equations, Faraday's law, charge-current continuity, vector potential. Time-harmonic fields, plane waves, polarization, skin effect, dielectric boundaries, and fiber optics. Radiation, dipole, gain, effective area. Prerequisite: ApSc 114, ECE 31. (Fall)

**114 Analog Signals and Systems (3)**

Lee and Staff

Applications of matrix theory and linear graphs to electrical network analysis; network equations; state-space formulation and solution, Fourier transforms and spectra in electrical systems. Network functions; analysis and synthesis of analog filters, the approximation problem; realization of filters. Prerequisite: ECE 12, 20. (Fall)

**117 Introduction to Digital  
Signal Processing (3)**

Kyriakopoulos, Doroslovacki, and Staff

Signal representation, sampling and quantization, discrete-time signals, z-transforms and spectra, difference equations. Fourier analysis. Discrete Fourier transform, IIR and FIR filter design. Prerequisite: ECE 11. (Spring)

**121 Analog Electronics Design (4)** Korman and Staff

Lecture (3 hours), laboratory (3 hours). Design, testing, and measurement of analog electronic circuits. Differential and multistage amplifiers. Output stages and power amplifiers. Frequency response of amplifiers, high-frequency models of FETs and BJTs. Introduction to feedback circuit topologies. Use of electronic CAD tools, such as P-SPICE. Prerequisite: ECE 20. (Spring)

**122 Digital Electronics and Design (4)** Korman and Staff

Lecture (3 hours), laboratory (3 hours). Design and testing of logic gates, regenerative logic circuits, and semiconductor memory circuits. Implementation of such circuits with NMOS, CMOS, TTL, and other integrated circuit technologies. Use of electronic CAD tools, such as SPICE. Prerequisite: ECE 20, 140. (Fall)

**126 VLSI Design and Simulation (3)** Zaghloul and Staff

Design of VLSI circuits. PMOS and NMOS transistors, switch and gate logic, design rules, CAD system, speed and power considerations, scaling of transistors to the nano-scale, designing with highly variable process parameters. The student will design a VLSI chip and simulate the design. May be taken for graduate credit. Prerequisite: ECE 122, 162. (Fall)

**127 VLSI Fabrication Techniques (3)** Zaghloul and Staff

Modern process technologies associated with various types of processing. Silicon fabrication process, micro- and nanofabrications. Limitation at nano-scale, and other available technologies. Alternatives approach. May be taken for graduate credit.

(Spring)

**128 Design and Testing of VLSI Circuits (3)**

Zaghloul and Staff

ASIC and mixed-signal design methodology, use of ASIC design CAD tools. Logic synthesis, styles of synthesis, power/area/speed constraints. VLSI testing, fault models, design for testability techniques, scan path, built-in self-test. Testing of chips designed in ECE 126 and of nano-scale circuits. May be taken for graduate credit. Prerequisite: ECE 126. (Spring)

**134 Fiber Optical Communication (3)**

Pardavi-Horvath and Staff

Lightwave fundamentals. Integrated optics. Optical fiber waveguides. Light sources and detectors. Distribution networks and fiber components. Modulation. Noise and detection. System design. Prerequisite: ApSc 114; ECE 30 or 32. (Fall, odd years)

**140 Design of Logic Systems I (4)**

Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Boolean algebra; combinational and sequential circuits; minimization techniques; design-and-build logic subsystems, such as decoders, multiplexers, adders, and multipliers; use of CAD tools. Corequisite: ECE 20. (Spring)

**141 Microprocessors: Software,**

El-Ghazawi and Staff

**Hardware, and Interfacing (3)**

Microprocessor architecture, assembly language, address decoding, hardware interrupt, parallel and serial interfacing with various circuits, timer/counters, direct memory



access, microprocessor-based system. Hands-on laboratory experience is an integral part of this course. Prerequisite: ECE 140. (Fall)

**143 Communications Engineering (3)**

Doroslovacki and Staff

Fourier series and Fourier transform in relation to signal analysis. Convolution and linear filtering. Signal bandwidth and sampling theorem. Analog modulation. Random variables and stochastic processes; power spectrum. Digital modulation: BPSK, QPSK, MSK. Pulse code modulation, DPCM and delta modulation. Prerequisite: ApSc 115, ECE 12. (Spring)

**144 Introduction to Computer Networks (3)**

Doroslovacki and Staff

Types of networks. Circuit and packet switching. Layered network architectures. Electrical interfaces. Parity checking and CRC error detection codes. Automatic-repeat-request protocols. Routing. Flow and congestion control. Multiple-access protocols. LAN standards. Internetworking and transport layer protocol. Prerequisite: ApSc 115. (Spring)

**146 Communications Laboratory (1)**

Doroslovacki and Staff

Experiments supporting communications systems. Fourier analysis and Fourier transform. Sampling theorem, filtering, and aliasing. Amplitude modulation (AM), frequency modulation (FM), quantization, and pulse code modulation (PCM). Delta modulation. Binary phase shift keying (BPSK). Quadrature phase shift keying (PSK). Prerequisite or corequisite: ECE 143. (Spring)

**147 Data Communications Laboratory (1)**

Doroslovacki and Staff

Experiments in support of the analysis and design of communications systems with emphasis on network protocols. Time and frequency division multiplexing, flow

control, automatic repeat request, interfacing, token ring, token bus, multiple access for Ethernet, routing, packet switching. Prerequisite or corequisite: ECE 144. (Spring)

**148 Simulation of Communications Systems (3)** Vojcic and Staff

Representation and simulation of deterministic and random signals and systems.

Modeling of communication systems; performance measures and statistical methods for the interpretation of simulation results. Simulation techniques and technology in communications. Case studies. Corequisite: ECE 144 or equivalent. May be taken for graduate credit. (Spring)

**150 Introduction to Telemedicine (3)** Loew and Staff

Clinical applications; data dimensionality, acquisition, and conversion; transmission methods (wired, wireless); networking; compression; measurement of quality and accuracy; reception and display considerations; data archiving and retrieval; economic issues; user-interface considerations. Prerequisite: ECE 117; corequisite: ApSc 115. (Fall)

**151 Signal and Image Analysis (3)** Loew and Staff

Introduction and clinical applications; characteristics of biomedical problems, time- and frequency-domain techniques for signal feature analysis; spectral estimation and analysis; autoregressive modeling; detection and estimation of periodicity; digital images as two-dimensional signals; 2-D Fourier transform. Corequisite: ECE 12, ApSc 115. (Fall)

**153–54 Biomedical Engineering Seminar I–II (1–1)** Loew, Zara, and Staff

The courses are taken in sequence by students in the biomedical engineering major.

Students choose their specialty lab affiliation and participate in research projects of the lab. Journal club, written reports, and oral presentations. (Fall and spring)

**155 Capstone Design Preparation (1)** Zara and Staff

Elements of project design; formulation of project ideas. (Fall)

**156–58 Electrical, Computer, and Biomedical Engineering** Korman and Staff

**Capstone Project Lab I–II–III (1–3–2)**

The courses are taken in sequence by departmental majors beginning in the second semester of the junior year. After an introduction to the formal design process, the student plans, refines, designs, and constructs a one-year project. (Fall and spring)

**159 Biomedical Properties Laboratory (1)** Loew and Staff

Experiments are selected from the random walk model of diffusion, macroscopic diffusion processes, optical extinction in tissue, carrier-mediated transport (CMT), spectroscopy, hearing measurement, DNA identification, bioinformatics, and data mining. Prerequisite or corequisite: Phys 128. (Spring)

**160 Modern Measurements and Sensors (3)** Pardavi-Horvath and Staff

Measurement of dc, ac, and high-frequency signals. Interface electronic circuits.

Sensors for measurement of mechanical, optical, magnetic, electromagnetic, thermal, chemical, and biochemical signals. Prerequisite: ECE 32, 121, 140. May be taken for graduate credit. (Spring, even years)

**161 Introduction to Embedded Systems (3)** Eom and Staff

Microcontrollers and their application in embedded systems. Topics include assembly and C for microcontroller programming, serial and parallel I/O interfacing, and

multimedia interfacing. Students perform laboratory experiments and a final project to develop a microcontroller-based embedded system. Prerequisite: CSci 49, ECE 141.

(Spring)

**162 Design of Logic Systems II (4)**

Zaghloul and Staff

Lecture (3 hours), laboratory (3 hours). Introduction of ASIC design techniques; design and programming of FPGAs using CAD tools; timing in sequential circuits; essential hazards; races in sequential circuits; design-and-build FPGA project.

Prerequisite: ECE 140. (Fall)

**166 Electrical Power Laboratory (1)**

Harrington and Staff

Experiments in support of the analysis and design of electrical power systems.

Measurements of the characteristics of devices to generate electric power. Rectification and inversion processes for power systems and drives. Prerequisite or corequisite: ECE 177. (Fall)

**168 Microwave and Optics Laboratory (1)**

Lang and Staff

Experiments in transmission lines, network analyzer measurements of scattering parameters, microwave systems, fiber-optic systems and antennas. Introduction to the characteristics of laser and optical systems. Prerequisite: ECE 32. (Spring)

**172 Control Systems Design (3)**

Carroll and Staff

Mathematical models of linear systems; steady-state and transient analyses; root locus and frequency response methods; synthesis of linear feedback control systems.

Prerequisite: ApSc 114, ECE 12 or MAE 134. (Fall)

**176 Control Systems Laboratory (1)**

Carroll and Staff

Experiments in support of control theory, involving the use of the digital computer for process control in real time. Design of feedback and compensation with computer implementation. Digital simulation of linear and nonlinear systems. Prerequisite or corequisite: ECE 172. (Fall)

**177 Electrical Energy Conversion (3)**

Harrington and Staff

Fundamentals of electromechanical energy conversion. Three-phase and single-phase AC rotating machines and transformers, DC machines, rotating machines as circuit elements, power semiconductor converters, machine dynamics. Prerequisite: ECE 12, 31. (Spring)

**178 Electrical Power Systems (3)**

Harrington and Staff

Introduction to electrical power systems; transmission and distribution of electrical power, three-phase circuits, symmetrical components, fault analysis. Voltage, current, and power limitations. Analysis of lightning and switching surges in power systems. Protective devices—switchgear, arresters, and isolators. May be taken for graduate credit. (Fall)

**181 Computer Organization (3)**

Subramaniam and Staff

Structure and operation of a digital computer. Design of computer arithmetic units, data and instruction paths. Microprogramming; memory technology; virtual memory; caches; pipelined computer organization; characteristics of secondary storage; I/O interfacing. Prerequisite: ECE 162; corequisite: ECE 161. (Spring)

**182 Computer Architecture and Design (3)**

El-Ghazawi and Staff

Design of bus-based digital computer systems, memory subsystems, caches, and multiple processors. Comparison of RISC and CISC processors and standard buses.

Bus transfer and control signals. Performance, memory management, architectural support for protection, task switching, exception handling, instruction pipelines.

Prerequisite: ECE 181. (Fall)

**184 Principles and Practice of Biomedical Engineering (4)** Loew and Staff

Introduction to engineering principles applicable to medicine; medical measurements for clinical use and research; anatomy and physiology of the human body from system and cellular approaches. Principles of biomedical engineering are reinforced by determining and analyzing physiological measurements in laboratory exercises.

Prerequisite: ECE 11, ApSc 113. (Fall)

**187 Introduction to Medical Imaging Methods (3)** Zara and Staff

Common imaging modalities, including ultrasound, X-ray, MRI, CT, SPECT, and PET. Overview of linear systems, basic properties of an imaging system, the physics and instrumentation behind each modality, and their respective advantages, disadvantages, and applications. May be taken for graduate credit. Prerequisite: ECE 117, 184. (Spring)

**188 Introduction to Parallel and Distributed Computer Systems (3)** El-Ghazawi and Staff

Shared and distributed memory computer systems. Parallel computation. Interprocess communication and synchronization. Terminal, file transfer, and message handling protocols. Algorithms for deadlock detection, concurrency control, and synchronization in distributed systems. Network security and privacy. Resource control and management. Prerequisite: ECE 181. (Spring)

**192 Robotic Systems (3)** Carroll and Staff

Modeling and analysis of robot designs. Kinematics of mechanical linkages, structures, actuators, transmissions, and sensors. Design of robot control systems, computer programming, and vision systems. Use of artificial intelligence. Current industrial applications and limitations of robotic systems. Same as MAE 197. Prerequisite: computer programming, ApSc 58, ECE 172. (Spring)

**196 Robotics Laboratory (1)** Carroll and Staff

Experiments illustrating basic principles and programming of robots and other automated machinery. Design and writing of computer programs to use a robot's arm, vision, and data files to accomplish tasks. Prerequisite or corequisite: ECE 192/MAE 197. (Spring)

**197 Special Topics (1 to 3)** Staff

Topic to be announced in the Schedule of Classes. (Fall and spring)

**198 Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

**ENGINEERING MANAGEMENT AND SYSTEMS ENGINEERING**

*Professors* E.L. Murphree, Jr., H. Eisner, S. Sarkani, G. Frieder, T.A. Mazzuchi (*Chair*), J.P.

Deason, M.A. Stankosky, J.R. van Dorp

*Associate Professors* M.R. Duffey, H. Abeledo, J.A. Barbera, G.L. Shaw, J.J. Ryan

*Assistant Professors* A. Bada, E. Campos-Nanez, J.R. Santos

*Professorial Lecturers* W.A. Goetz, F. Allario, C.R. Cothorn, D.J. Ryan, C.H. Voas, J.E. Collins,

M.G. Goode, F.A. Calabrese, J.F. Starns, R.C. West, R.E. McCreight, B.L. Lewis, J.E.

Beach, R.B. Garrity, C.H. Bixler, T.H. Holzer, J.R. McCumber, D.R. Gally, G.D. Haddow,

J.W. Harris, Jr., J.S. Wasek, J.H. Chang, R.E. Cosentino, W.M. Hawes, W.J. Roberts, D.M. Egan, J.V. Shah, R.M. Andersen

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in systems engineering and Bachelor of Arts with a major in applied science and technology.

**1 Introduction to Systems Analysis (1)**

Mazzuchi and Staff

A survey of several aspects of systems analysis, including methodologies such as linear programming, network models, probability, and queuing theory, with applications to resource allocation, decision making, and statistical analysis.

Spreadsheet and laboratory exercises and projects. (Fall)

**101 Quantitative Models in**

Abeledo, Campos-Nanez and Staff

**Systems Engineering (3)**

Quantitative modeling techniques and their application to decision making in systems engineering. Linear, integer, and nonlinear optimization models. Stochastic models: inventory control, queuing systems, and regression analysis. Elements of Monte Carlo and discrete event system simulation. Prerequisite: ApSc 115. (Fall)

**102 Operations Research Methods (3)**

Abeledo, Campos-Nanez and Staff

Deterministic and stochastic methods. Optimization algorithms: Simplex method, Branch and Bound, combinatorial algorithms, heuristic methods. Optimization theory: convexity, duality, sensitivity analysis. Stochastic optimization: marginal analysis, Markov chains, Markov decision processes. Prerequisite: ApSc 115 and EMSE 109, or permission of instructor. (Spring)

**109 Mathematics in Operations Research (3)**

Abeledo and Staff



Mathematical foundations of optimization theory; linear algebra, advanced calculus, convexity theory. Geometrical interpretations and use of software. Prerequisite: Math 33. (Spring)

**135 Systems Thinking and Policy Modeling I (3)** Campos-Nanez and Staff

Introduction to systems thinking and the system dynamics approach to policy analysis, with applications to business management and public policy. Causal-loop and stock and flow models of business growth, technology adoption, and marketing. Use of role-based games to explain key principles of systems. Use of simulation software to model problems and case studies. (Fall)

**154 Applied Optimization Modeling (3)** Abeledo and Staff

Analysis of linear, integer, and nonlinear optimization models of decision problems that arise in industry, business, and government. Modeling techniques and applications; use of optimization software to solve models. Prerequisite: EMSE 101 or permission of instructor. (Fall)

**160 Survey of Finance and Engineering Economics (3)** Duffey and Staff

Survey of material relevant to financial decision-making for engineering activity. Includes traditional engineering economy topics; fundamentals of accounting; and financial planning, budgeting, and estimating applicable to the management of technical organizations. (Fall, spring, and summer)

**171 Data Analysis for Engineers and Scientists (3)** Mazzuchi, van Dorp

Design of experiments and data collection. Regression, correlation, and prediction. Multivariate analysis, data pooling, and data compression. Model validation. Prerequisite: ApSc 115. (Fall and spring)

**173 Discrete Systems Simulation (3)** van Dorp and Staff

Simulation of discrete stochastic models. Simulation languages. Random-number/random-variate generation. Statistical design and analysis of experiments, terminating/nonterminating simulations; comparison of system designs. Input distributions, variance reduction, validation of models. Prerequisite: ApSc 115; CSci 49, 50, or 53; or permission of instructor. Same as Stat 173. (Spring)

**182 Quality Control and Acceptance Sampling (3)** Mazzuchi and Staff

Statistical approaches to quality assurance. Single and multivariate control charts, acceptance sampling by attributes and variables, process capability and design of experiments. Prerequisite: ApSc 115 or permission of instructor. (Spring)

**191 Systems Engineering Senior Project (3)** Abeledo and Staff

Field experience in systems engineering on a team basis. Each small group confronts an actual problem and formulates a solution using systems engineering methods and models. Oral and written reports. Prerequisite or corequisite: EMSE 154, 171, 173, 182. (Spring)

**198 Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or senior status. (Fall and spring)

**ENGLISH**

*Professors* R.N. Ganz, Jr., J.A.A. Plotz, C.W. Sten, D. McAleavey, O.A. Seavey, A. Romines, J.A. Miller, J. Shore, F. Moskowitz, M. Alcorn, J.J. Cohen (*Chair*), J.G. Harris, K. Moreland, S. Knapp, R.L. Combs, G. Wald, T.G. Wallace, M. Frawley, R. McRuer

*Associate Professors* G. Carter, D. Moshenberg, M.S. Soltan, J.M. Green-Lewis, P. Cook, P.

Chu, P. Griffith, E. Schreiber, J.C. James, K. Daiya

*Assistant Professors* H. Dugan, A. Lopez, J. Hsy, H.G. Carrillo, K. Lawrence, G. Pardlo

*Adjunct Professors* T.V. Mallon, A.C. Stokes

*Professorial Lecturers* D. Scarboro, K.Z. Keller

*Jenny McKean Moore Writer in Residence* E. Skoog

*Bachelor of Arts with a major in English*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Either a course in the Engl 40s series or one of the following two-course sequences: Engl 51–52, 61 and 62, 71–72, 73–74, or 91–92.
3. Required courses in related areas—second-year proficiency in a single foreign language, as demonstrated by completion of four semesters of college-level language study or the equivalent. (In the case of Latin, Latin 3 is sufficient.)
4. Required for the major—33 credit hours of 100-level English courses, including (a) two courses in literature before 1700; (b) two courses in literature between 1700 and 1900; (c) one course in literature after 1900; and (d) Engl 120 and an additional course in literary theory and/or cultural studies.

With departmental approval, courses with appropriate subject matter may be substituted for those specified above. A single course may fulfill only one requirement.

Beyond the seven courses in specified areas listed above, students take four additional 100-level English courses, which may be in creative writing. With approval of the English Department, two courses in the literature of a foreign language (either in the original language or in translation) may be substituted for English electives.

*Special Honors*—Majors in English who wish to be considered for Special Honors must apply in writing in the spring semester of the junior year; they must meet the requirements stated under University Regulations and have a GPA of 3.25 in courses in the English Department at the time of applying. Candidates take Engl 196 in the fall semester of the senior year and Engl 194 or 198 in the spring semester. To be eligible for graduation with Special Honors, candidates must earn an *A* or *A–* on the Honors Thesis and have achieved a 3.4 grade-point average in courses in the English Department.

*Bachelor of Arts with a major in English and creative writing*—Except for the requirement of a creative thesis, this major closely resembles the curriculum that is followed by an English major pursuing a creative writing minor. Admission to the major is restricted, and a separate application must be filed in writing prior to the senior year. No more than two students per thesis director are accepted per year.

The major in English and creative writing requires 36 credits of 100-level English courses, matching items 1 through 4(d) indicated under the Bachelor of Arts with a major in English, with the additional requirements of Engl 81 as a prerequisite and five 100-level creative writing courses, including Engl 194; three 100-level courses must be in a single genre.

*Bachelor of Arts with a major in dramatic literature*—The Department of Theatre and Dance and the Department of English offer an interdisciplinary major in dramatic literature. See Dramatic Literature.

*Combined Bachelor of Arts/Master of Arts in the field of English*—Interested students should consult a departmental advisor early in their junior year.

*Minor in English*—Either a course in the Engl 40s series or one of the following two-course sequences: Engl 51–52, 61 and 62, 71–72, 73–74, or 91–92, and 15 credits of 100-level literature courses, chosen in consultation with an advisor in the department.

*Minor in creative writing*—Engl 81, either a course in the Engl 40s series or one of the following two course sequences: Engl 51–52, 61 and 62, 71–72, 73–74, or 91–92, and five 100-level courses offered by the department, of which at least four must be in creative writing, including at least three in poetry (Engl 104, 107, and 117 or 181) or three in fiction (Engl 103, 106, and 116 or 181) or two in playwriting (Engl 105, 108).

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Note:** All creative writing courses are limited to 15 students. Two creative writing courses in the same genre may not be taken during the same semester.

**Departmental prerequisite:** A literature course, such as Engl 40 through 74 or 91 or 92, is prerequisite to all 100-level English courses with the exception of Engl 111, 160, 161, and 162.

**40 Critical Readings (3)**

Wald, Cohen

An introduction to the study of literature in English from a global perspective. May be repeated for credit provided the topic differs. (Fall and spring)

**41 Literature of the Americas (3)**

Staff

American literature considered in a transhemispheric framework as writing that probes and spans the boundaries of the nation, connecting the United States to the rest of the Americas and to other parts of the globe.

**42 Myths of Britain (3)**

Staff

Why much great English literature turns out not to be so English after all. The early literature of the island within a transnational frame. Readings range from *Beowulf* to Arthurian myths to Shakespeare.

**43 Shakespeare's Globe (3)** Staff

Links between Shakespeare's geographical and theatrical "Globes." How did Shakespeare and his company represent racial, cultural, and linguistic difference in the Globe? What place did they imagine for England and Europe in this newly globalized world?

**51–52 Introduction to English Literature (3–3)** Plotz and Staff

Representative works by major British authors studied in their historical context; discussion of recurrent themes and introduction to various types and forms of imaginative literature. Engl 51; Middle Ages through the 18th century. Engl 52: 19th and 20th centuries. (Academic year)

**61 Tragedy (3)** Carter

Modes of tragedy as developed in drama, nondramatic verse, and prose fiction in literature from ancient to modern times—Book of Job to Beckett. (Fall and spring)

**62 Comedy (3)** Staff

Modes of comedy as developed in drama, nondramatic verse, and prose fiction—Chaucer to Borges. (Fall and spring)

**71–72 Introduction to American Literature (3–3)** Seavey, Combs,  
Moreland, and Staff

Historical survey. Engl 71: From early American writing through Melville, Whitman, and Dickinson. Engl 72: From Twain, James, and Crane to the present. (Academic year)

**73–74 Introduction to the Literature of Black America (3–3)** James, Miller, Wald

Survey of several genres of African American literature. Engl 73: from the 18th through the late 19th centuries, in such cultural contexts as the developing concept of “race.” Engl 74: from the early 20th century to the present day, in such cultural contexts as the “new Negro” Renaissance and the civil rights and Black Power movements. (Academic year)

**81 Introduction to Creative Writing (3)** McAleavey and Staff

An exploration of genres of creative writing (fiction, poetry, and/or playwriting). Basic problems and techniques; examples of modern approaches; weekly writing assignments; workshop and/or conference discussion of student writing. (Fall and spring)

**91–92 Survey of Postcolonial Literature (3–3)** Daiya and Staff

Introduction to postcolonial literature from the perspectives of colonizer and colonized in Great Britain, India, Pakistan, Bangladesh, Sri Lanka, Australia, New Zealand, Canada, Anglophone Africa, and the Caribbean region; literature written on the wing, in diaspora. (Academic year)

**103 Intermediate Fiction I (3)** Moskowitz, Griffith, Carrillo, and Staff

The writing of fiction. Prerequisite: Engl 81 or equivalent and two semesters of literature courses (the second literature course may be taken concurrently). (Fall and spring)

**104 Intermediate Poetry I (3)** McAleavey, Shore, and Staff

The writing of poetry. Prerequisite: Engl 81 or equivalent and two semesters of literature courses (the second literature course may be taken concurrently).

(Fall and spring)

**105 Fundamentals of Dramatic Writing (3)** Griffith

Same as TrDa 105. A workshop in playwriting and screenwriting, with emphasis on dramatic structure. Prerequisite: Engl 81 or equivalent and two semesters of literature courses (the second literature course may be taken concurrently). (Fall)

**106 Intermediate Fiction II (3)** Moskowitz, Carrillo

The writing of fiction. Prerequisite: Engl 103 or equivalent. (Fall and spring)

**107 Intermediate Poetry II (3)** McAleavey, Shore, Pardlo

The writing of poetry. Prerequisite: Engl 104 or equivalent. (Fall and spring)

**108 Intermediate Dramatic Writing (3)** Griffith

Same as TrDa 108. A workshop developing scripts for both theatre and film.

Prerequisite: Engl 105 or equivalent. May be repeated for credit with departmental approval. (Spring)

**110 Topics in the History of the English Language (3)** Hsy, Carillo, Lopez

The cultural and literary functions of English across time and space. Scope and methodology vary by instructor. Topics may include language and identity, theoretical and linguistic approaches to language, multilingualism, diasporic writing, or history and periodization.

**111 Preparation for Peer Tutors in Writing (3)** Schreiber



For undergraduates accepted as tutors in the Writing Center: study and practice of techniques for prewriting, writing, and revision; readings on collaborative learning, the composing process, composition theory, cognitive psychology, critical thinking, and the teaching of writing; observation and exercises in writing, peer review, and tutoring. Limited to 15 students. (Fall)

112 **Chaucer (3)** Cohen, Hsy

Chaucer's major works seen as exciting, lively texts from the modern perspective and as products of specific economic, social, and cultural trends of the late 14th century. Focus on *The Canterbury Tales*, read in the original Middle English.

113 **Medieval Literature (3)** Cohen, Dugan, Hsy

Readings from a wide range of medieval genres, including romances, saints' legends, mystical narratives, lyrics, civic drama, and social satires, to explore some of the principal concerns of medieval culture. How these texts responded to and shaped changing patterns of medieval culture, as the clergy, the aristocracy, and the urban bourgeoisie attempted to define a culture of their own.

116 **Advanced Fiction (3)** Moskowitz, Carrillo

Further workshop study of the writing of fiction. Prerequisite: Engl 106 or equivalent.

May be repeated for credit with departmental approval. (Spring)

117 **Advanced Poetry (3)** McAleavey, Shore, Pardlo

Further workshop study of the writing of poetry. Prerequisite: Engl 107 or equivalent.

May be repeated for credit with departmental approval. (Fall)

120 **Critical Methods (3)** Staff

The topics and techniques of literary analysis, applied to English and American poetry, prose fiction, and drama. Attention to stylistic and structural analysis, narratology, and critical theory applied to specific literary texts. (Fall and spring)

124 **Play Analysis** (3) Staff

Same as TrDa 124. Traditional and nontraditional (Aristotelian and non-Aristotelian) approaches to the analysis of dramatic literature; literary and theatrical techniques used by playwrights. (Spring, odd years)

125 **The English Renaissance** (3) Harris, Cook, Dugan

Verse and prose written in the period 1515–1625, examined in relation to cultural practices and social institutions that shaped English life. More, Sidney, Spenser, Shakespeare, Donne, Jonson, Bacon, Herbert, many others.

127–28 **Shakespeare** (3–3) Harris, Dugan, Cook

Close study of six or seven plays each semester, with emphasis on the texts in history and ideology. Attention to current critical practices (feminist, materialist, psychoanalytic), modern performance practice, and Shakespeare as a cultural institution. (Academic year)

129 **Topics in Shakespeare Studies** (3) Cook, Harris, Dugan

Critical study of a particular aspect of Shakespeare's work, or of a distinctive approach to the plays. Projected topics: Shakespeare on film, the history plays and Elizabethan England, 18th-century rewritings of Shakespeare, Shakespeare as poet, cultural materialist readings of Shakespeare.

130 **Milton** (3) Cook

Study of the major works in verse and prose, following the course of Milton's career.

(Spring)

131–32 **The 18th Century: Literature and Authority** (3–3)

Wallace, Seavey

Readings in significant 18th-century English writers—Dryden, Swift, Pope, Johnson, and others—with emphasis on tracing the ways in which literary texts contain, perpetuate, and subvert social and political ideologies.

133 **The Romantic Movement** (3)

Plotz

Major figures and topics in English and Continental romanticism: Blake, Wordsworth, Coleridge, Lamb, Byron, Shelley, Keats, Hazlitt, DeQuincey, and others.

134 **Children's Literature** (3)

Plotz

Nineteenth- and twentieth-century children's texts that illuminate the several worlds of childhood: the "small world" of childhood perception, the larger world of social and historical forces, and the "secondary world" of fantasy.

135–36 **Victorian Literature** (3–3)

Carter, Frawley, Green-Lewis

Engl 135: 1830–1865—E. Brontë, Dickens; Tennyson, Browning, Arnold; Darwin, Carlyle, Ruskin. Engl 136: 1865–1900—Eliot, Hardy, Conrad; Swinburne, the Rossettis, Morris; Pater, Wilde, the Nineties.

137 **Modernism** (3)

Soltan, Green-Lewis

The emergence of modernist experimentation (and the sense of epistemological and moral crisis it expressed) in the poetry and prose of Pound, T.S. Eliot, Woolf, Kafka, and others.

139–40 **20th-Century Irish Literature** (3–3)

Soltan and Staff

Irish writers from the time of the literary revival in the late 19th century to the present.  
Engl 139: Yeats and other Irish poets and playwrights of his time and after—Synge,

O'Casey, Kavanagh, Heaney, and others. Engl 140: Joyce through *Ulysses* and other fiction writers of later generations—O'Brien, Beckett, and others.

153–54 **The English Novel (3–3)** Wallace, Frawley

Engl 153: The 18th century—Defoe, Richardson, Fielding, Sterne, and others. Engl

154: The 19th century—Austen, the Brontës, Dickens, George Eliot, Hardy, and others.

155–56 **The English Drama (3–3)** Cook, Harris, Dugan

Engl 155: Shakespeare's contemporaries. Engl 156: Historical survey, 1660 to present.

158 **Contemporary Drama (3)** Griffith

Examines drama written since 1960 in the light of postmodernism as both a literary and a theatrical theory. Explores the ways contemporary playwrights and directors challenge the perceptions and assumptions of today's audience.

160 **Early American Literature and Culture (3)** Seavey

The shaping of America's early literary and cultural traditions as shown by significant writers of the colonial and early national periods: Bradstreet, Cotton Mather, Edwards, Franklin, Crèvecoeur, and others. (Fall)

161 **American Romanticism (3)** Sten, Seavey

The shaping of America's literary and cultural traditions as shown by significant writers of the Romantic era: Poe, Emerson, Hawthorne, Melville, Thoreau, Whitman, Dickinson, and others. (Spring)

162 **American Realism (3)** Romines

The shaping of America's literary and cultural traditions as shown by significant writers of the Realist school: Twain, James, Crane, Howells, Wharton, Chopin, Robinson, and others. (Fall)

163–64 **American Poetry (3–3)**

Combs, McAleavey, Ganz

Close examination of major American poems. Engl 163: From the beginnings to the early 20th century: works by Poe, Emerson, Whitman, Dickinson, and others. Engl 164: Since the early 20th century: Frost, Eliot, Stevens, Bishop, Hughes, Ashbery, and others.

165–66 **American Drama (3–3)**

Combs

Engl 165: 19th-century melodrama and the emergence of realism; works by O'Neill and other dramatists of the early 20th century. Engl 166: Developments in modern American drama since World War II, including works by Williams, Miller, Albee, Shepard, Rabe, Guare, Mamet, Henley, Wasserstein, Shange, Hwang, Wilson, and others.

167–68 **The American Novel (3–3)**

Moreland, Romines, Sten

Historical and critical study of major works in the American novelistic tradition. Engl 167: From the beginnings through the 19th century: Hawthorne, Melville, James, Twain, Dreiser, and others. Engl 168: The 20th century: Wharton, Cather, Anderson, Hemingway, Fitzgerald, Faulkner, Wright, R.P. Warren, Nabokov, and others.

169 **Ethnicity and Place in American Literature (3)**

Chu, Miller, James, Lopez

The relationships among ethnic identity, authorship, regional setting, and national consciousness. Differences in the literary culture of ethnically, racially, and regionally

diverse American populations; how considerations of ethnicity and place have been reshaping the American literary canon. Texts and emphases vary with instructor.

**170 The Short Story (3)**

Combs, Soltan

An extensive survey of short fiction by a wide variety of writers of the 19th and 20th centuries, about half of them American; readings on the art of the short story by writers and literary critics.

**171 Major Authors (3)**

Staff

In-depth studies of a single figure or two or three authors (of British, American, or other nationality) who have written in English. Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs.

**172 Selected Topics in Literature (3)**

Staff

Topics announced in the Schedule of Classes; may be repeated for credit provided the topic differs. Topics may include the Bloomsbury group; southern literature; the picaresque; literature of the Holocaust; literature and politics; Freud, Dostoevsky, and Shakespeare.

**173 Selected Topics in Post-Colonial Literature (3)**

Plotz, Daiya

Historical, critical, and theoretical study of post-colonial literatures—African, Asian, Commonwealth—written in English. Topics vary with instructor; may be repeated for credit provided the topic differs.

**175 Gender and Literature (3)**

Romines, Wald, McRuer, Chu

Symbolic representations of culturally defined roles and assumptions in literature.

Male and female gender roles as fundamental to culture; the representation of culture,

in literature especially and in the arts and humanities generally. May be repeated for credit provided the topic differs.

**176 Disability Studies (3)**

McRuer and Staff

Consideration of cultural texts that illustrate or illuminate issues of ability and disability—terms that extend the prism through which human experience may be understood. May be repeated once for credit provided the topic differs.

**177–78 Contemporary American Literature (3–3)**

Moskowitz, Chu,

Moreland, Soltan

Engl 177: Tradition and innovation in fiction, memoir, and poetry of the 1950s and '60s: Bishop, Creeley, Ginsberg, Johnson, Kerouac, Levertov, Baldwin, Barth, Kingston. Engl 178: Aspects of multicultural American identities in bildungsroman, memoir, poetry, and drama of the 1970s, '80s, and '90s: Guterson, Murayama, Tan, Brooks, Cisneros, Rodriguez, Silko, Alexie, Rich.

**179 Special Topics in Literary Theory and/or Cultural Studies (3)**

Staff

Selected topics in the diverse theoretical methodologies and interdisciplinary studies that characterize contemporary English and American literary studies. May be repeated for credit provided that topic differs.

**181 Creative Writing Workshop (3)**

Taught by the Jenny McKean Moore Writer in Residence in Washington; for undergraduates and graduate students. Prerequisite: a 100-level creative writing course. May be repeated for credit if taught by a different instructor. (Fall and spring)

**182 Special Topics in Creative Writing (3)**

McAleavey, Moskowitz,

Shore, Griffith, Carrillo

Topics announced prior to the registration period; may be repeated for credit provided the topic differs. Topics may include poetry and poetics; forms and methods in fiction; forms and methods in poetry; memoir and personal narratives; creative nonfiction; “Literature, Live!”; avant-garde and experimental writing.

**183 Introduction to U.S. Latina/o Literature and Culture (3)** Lopez, Carillo, and Staff

Introduction to the basic texts in the Chicana/o, Cuban-American, Dominican-American, and Puerto Rican literary and cultural traditions. Works by U.S. writers of Central American origin are discussed as well.

**184 Topics in U.S. Latina/o Literature and Culture (3)** Lopez, Carillo, and Staff

In-depth exploration of a critical issue in the field of Latina/o literary and cultural studies. Topics may include ideologies of literary recovery, transnationalism and diaspora, blackness and *latinidad*.

**185 Topics in African American Literary Studies (3)** James, Miller, Wald

Intensive study of a single aspect of African American literature: major authors, genre, theme, movement. Substantial attention to the critical tradition.

**186 Cultural Theory and Black Studies (3)** James, Miller, Wald

Selected topics in critical and cultural theories—often interdisciplinary—as used in understanding African American literature and culture. Topics may include genre, medium, period, social change, and leading contemporary African American thinkers/writers.

**187 Asian American Literature (3)** Chu



How Asian American writers construct their identities in dialogue with shifting ideas of “America.” Asian American history, gendering subjects, orientalism and postcolonial subjectivity, interracial relations, canonization. Representative writers: Kingston, Hwang, Jen, Chang-rae Lee, Ondaatje, Lahiri, Bulosan, Hagedorn.

**188 Jewish American Literature (3)**

Moskowitz

One hundred years of Jewish American writing in fiction, autobiography, poetry, drama, and non-fictional prose. The immigrant experience, American philosemitism and antisemitism, the Holocaust and after, the New York intellectuals, Jewish feminism, and the patriarchal tradition.

**189 Queer Studies (3)**

McRuer and Staff

Examination of literature and culture in the context of the history and experience of lesbian, gay, bisexual, and transgendered people, with consideration of sexual identity as a core component of human experience. May be repeated once for credit provided the topic differs.

**190 19th-Century Black Literature of the Americas (3)**

James

Studies in 19th-century black literature of the Americas and the transatlantic. Writing from the United States, Latin America, the Caribbean, Britain, and Africa may be included. Topics and emphasis may vary.

**191 Folger Seminar (3)**

Staff

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as Hist 155.

**192 Studies in Contemporary Literature (1 to 3)**

Staff

194 **Creative Writing Senior Thesis (3)**

McAleavey, Moskowitz,

Shore, Griffith, Carrillo

Under the guidance of an instructor, the student composes an original manuscript of poetry or short fiction accompanied by an essay situating the student's work in the contemporary context. Open only to seniors admitted to the English and creative writing major. (Fall and spring)

195 **Literary Studies Workshop (1)**

Staff

Introduction to advanced research and writing in literature. Open only to second-semester juniors, except that students who plan study abroad in their junior year may take the course as sophomores.

196 **Honors Seminar (3)**

Harris

Genre and genre theory; literature as cultural artifact and as instrument of cultural criticism; various critical approaches—ideological, historical, and ahistorical. Open only to first-semester senior honors candidates in English. (Fall)

197 **Independent Study (3)**

Cohen and Staff

For exceptional students, typically majors, whose academic objectives are not accommodated in regular courses. Students must obtain departmental approval and arrange for supervision by an appropriate member of the faculty. (Fall and spring)

198 **Honors Thesis (3)**

Staff

Under the guidance of an instructor, the student writes a thesis on an approved topic. Open only to senior honors candidates in English. (Fall and spring)

199 **Internship: Research, Writing, Editing (1 to 4)**

Staff

Position of responsibility with a publication, educational project, firm, or cultural organization offering practical experience in research, writing, editing, etc. Restricted to junior and senior English majors; approval of supervising faculty required for registration. May be repeated for credit; a maximum of 3 credits may be counted toward the English major. *P/NP* grading only.

## **ENGLISH FOR ACADEMIC PURPOSES**

*Director of the Language Center S. Hamano*

### **15 American Multicultural Perspectives** Siczek and Staff

#### **in Washington, D.C. (3)**

A writing-intensive course that explores the capital's rich multicultural heritage through diverse texts and community resources. Designed to represent the pedagogy of the American university experience through critical reading, inquiry, and discussion. Upon successful completion of EAP 15, students take UW 20. Laboratory fee.

### **46 EAP Tutorial (0 to 4)** Staff

Individualized instruction in specific skill areas. Language Center approval required. Tuition is charged at the rate of 1, 2, 3, or 4 credits, for 1, 2, 3, or 4 hours of instruction per week, respectively. Credit for this course cannot be applied toward a degree.

### **109 Academic Writing and Communication** Mueller and Staff

#### **Skills for Graduate Students (0)**

The research/writing process. Practice in reading university-level materials and reading-based writing with focus on key writing and oral communication skills. Four class hours and two language lab hours per week. Tuition is charged at the rate of 3 credit hours. Additional lab fee required. Students who are not placed into the course

require instructor's permission, which will typically be granted on a space-available basis.

**110 Academic Writing and Research**

Mueller and Staff

**for Graduate Students I (0)**

The research/writing process. Practice in reading university-level materials and reading-based writing with a focus on key writing skills. Four class hours per week. Tuition is charged at the rate of 3 credit hours. Students who are not placed into the course require instructor's permission, which will typically be granted on a space-available basis.

**111 Academic Writing and Research for Graduate Students II (3)**

Mueller

Academic writing and advanced research course for students who demonstrate high proficiency in English. Small group work and oral presentations on research.

**ENVIRONMENTAL STUDIES**

*Director D. Rain*

Columbian College of Arts and Sciences offers an interdisciplinary program in environmental studies leading to the degree of Bachelor of Arts. Housed in the Department of Geography, the major combines courses drawn from biological sciences, geological sciences, and geography, as well as American studies, anthropology, economics, English, history, public health, religion, sociology, and statistics.

*Bachelor of Arts with a major in environmental studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—BiSc 5–6 or 13–14; Geol 1 and 2, or 2 and 5; Geog 2 and 3.

3. Required courses for the major—24 credits chosen from designated courses in the areas of environmental techniques and assessment, environmental processes, and environment and society. Lists of courses that may be chosen to fulfill the areas are available in the Department of Geography; a minimum of two courses must be selected from each area. In addition to the 24 credits of area courses, a 3-credit field course must be chosen from BiSc 156 or 158, Geol 195, and Geog 196.

## **EXERCISE SCIENCE**

*Professors* L. DiPietro (*Chair*), L. Hamm, W. Miller

*Associate Professors* B.J. Westerman, T. Miller

*Assistant Professors* A. Visek, M. Barron

See the School of Public Health and Health Services for programs of study leading to the Bachelor of Science with majors in exercise science and athletic training. Excluding courses specified as for departmental majors only, the exercise science courses that follow are available to undergraduates in other schools and may be used toward a secondary field in exercise science.

## **EXERCISE SCIENCE**

### **50 Emergency Procedures and Safety Skills (2)**

Introduction to common safety principles, predisposing factors and common causes of accidents, injuries, and illnesses. The course includes American Red Cross Professional Rescuer and Automated External Defibrillator certification. Laboratory fee.

### **101 Topics (1 to 3)**

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**102 Introduction to Athletic Training (3)**

Introduction to the profession of athletic training. Exploration of topics related to athletic training and sports medicine.

**103 Professional Foundations in Exercise Science (3)**

Nature, scope, and scientific basis of exercise science: orientation to professional competencies and opportunities.

**109 Aerobic Exercise Testing and Prescription (3)**

The adaptations of human physiological systems to various methods of aerobic exercise. Cardiorespiratory adaptations to endurance exercise training and how these adaptations provide a prophylaxis to cardiovascular and metabolic disease.

Prerequisite: ExSc 50, 152, 154–55.

**110 Anaerobic Exercise Testing and Prescription (3)**

The adaptations of human physiological systems to various methods of anaerobic training. Neuromuscular adaptations to strength and power training; primary focus on athletic populations. Design of training programs. Prerequisite: ExSc 50, 152, 154–55. Laboratory fee.

**119 Basic Nutrition (3)**

The six classes of nutrients, their chemical basis, their physiological functions, and their conversion into usable energy. Nutrient needs across the lifespan.

**121 Current Concepts in Nutrition and Health (3)**

Basic nutritional concepts and their relation to health and disease. Prerequisite: ExSc 119.

**126 Medical Issues in Athletic Training (3)**

For athletic training majors only. General medical issues and pharmacology as they relate to the profession of athletic training. Laboratory fee.

**134 Sport and Nutrition (3)**

The nutrition needs for recreational exercise and sports; skills in assessing nutrition needs; development of individual nutrition programs that are sport/activity-specific; and identification and correction of nutrition problems affecting sports performance.

**137 Athletic Training Administration (3)**

Standards, policies, and practices of organization, supervision, and administration of athletic training programs.

**138 Administration of Health and Fitness Programs (3)**

Basic principles related to the administration of programs in the fitness, exercise, sport and sports medicine fields.

**139 Principles of Coaching (3)**

Study of coach/athlete behavioral patterns and interactions, coaching methods, and interdisciplinary principles applicable to coaching.

**140 Exercise and Sport Psychology (3)**

Study of psychological aspects of sport participants, athletes, teams, and competition in sport situations, including personality, motivation, performance level, achievement, and behavioral change strategies; social factors, training events, and measurement techniques. Prerequisite: Psyc 1.

**141 Psychology of Injury and Performance (3)**

For athletic training majors only. A study of various areas within the behavioral sciences related to the rehabilitation and prevention of injuries and the injured physically active individual.

**142 Physical Activity, Health, and Behavior Change (3)**

The relation of behavioral factors to health and disease. The role of physical activity in the prevention of chronic disease and disability. Health behavior theories and cognitive behavioral approaches to health behavior change.

**145 Working, Stress, and Human Values (3)**

Recognition, prevention, and control of stress and the burnout syndrome. A humanistic inquiry into values, attitudes, and stressors associated with various professions.

Admission by permission of instructor.

**146 Stress Management, Burnout, and Human Potential (3)**

The nature, prevention, and control of the stress and burnout syndrome. Students will design an overall stress management strategy that incorporates achievement of life goals and human potential in a stress-efficient manner. Admission by permission of instructor.

**151 Kinesiology (3)**

Analysis of human movement with emphasis on the biomechanics of exercise and sport movement patterns. Prerequisite: ExSc 154 or equivalent, an approved course in anatomy.

**152 Physiology of Exercise (3)**

The physiological functions of the body and the effect of exercise on these functions. Prerequisite: ExSc 154–55.



**154–55 Applied Anatomy Physiology I–II (4–4)**

Fundamentals of human anatomy and physiology for students preparing for health sciences professions. Emphasis on bones, joints, muscles, innervation, and blood supply. Laboratory fee. ExSc 154 is prerequisite to ExSc 155.

**158 Prevention and Care of Injury (3)**

Information and practical experience in preventing, recognizing, and treating injuries that occur in physically active individuals. Prerequisite: ExSc 50, 154–55 or equivalent.

**159 Injury Assessment (4)**

Information and practical experience in the evaluation and assessment of orthopedic and other injuries. Prerequisite: ExSc 158. Laboratory fee.

**160 Orthopaedic Taping and Bracing (1)**

Laboratory complement to ExSc 158; required for athletic training majors. Laboratory fee.

**161–64 Athletic Training Practicum (3–3–3–3)**

For athletic training majors only. Practical clinical experience and application of athletic training skills. Laboratory fee.

**168 Therapeutic Modalities in Sports Medicine (4)**

Explanation and demonstration of the use of therapeutic modalities on the healing process, including discussion of the use of therapeutic modalities to enhance the rehabilitation process after athletic injury. Prerequisite: ExSc 159 or permission of instructor. Laboratory fee.

**169 Therapeutic Exercise in Sports Medicine (4)**

Discussion and application of general rehabilitation techniques to specific athletic injuries, including evaluation, implementation, and follow-up after specific joint injuries. Prerequisite: ExSc 159 or permission of instructor.

**171 Issues in Exercise Science (3)**

Study of current literature with implications for exercise science specializations; use of library resources and retrieval systems; evaluation of professional competencies. For senior exercise science and athletic training majors only.

**173 Independent Study (3)**

For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

**175 Internship (1 to 9)**

For departmental majors. Admission by permission of advisor.

**HEALTH AND WELLNESS**

**101 Topics (1 to 3)**

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**102 Stress Management (3)**

A holistic view of stress management, including mind, body, spirit, and emotions. The dominant stressors and how they affect health and wellness.

**103 Issues in Men's Health (3)**

Issues in men's health ranging from the physical and emotional to the spiritual and occupational.

**104 Outdoor and Environmental Education (3)**

A conceptual and experiential introduction to outdoor education, environmental education, wilderness travel, and outdoor leadership.

**105 Yoga and the Meaning of Life (3)**

The historical teachings that have contributed to the physical, psychological, and spiritual practices of yoga.

**106 Drug Awareness (3)**

Analysis of the complex role that drugs play in contemporary society and the ethical, legal, socioeconomic, and health issues that surround their therapeutic and recreational use.

**108 Weight and Society (3)**

Background and concepts of body dissatisfaction, disordered eating, food preoccupation, and exercise obsession.

**109 Human Sexuality (3)**

Biological and developmental aspects of human sexuality; psychological and emotional aspects of sexual behavior; sexual identity; social forces affecting sexual issues; and research trends in the area of human sexuality.

**110 Issues in Alternative Medicine (3)**

Various modalities of alternative/complementary/integrative therapy. Critical analysis and evaluation of the many dimensions of these approaches.

**111 Sport and the Law (3)**

Basic principles of the law as it applies to amateur and professional sports. Legal issues and their ramifications.

**112 Issues in Women's Health (3)**

An introduction to health promotion and disease prevention pertaining especially to diseases, disorders, and conditions that are more prevalent among or unique to women or for which risk factors or interventions may differ for women and men. Topics are covered from epidemiological, sociocultural, historical, and behavioral perspectives.

**114 Personal Health and Wellness (3)**

A survey of the various components involved in personal health and wellness, such as personal fitness, sexuality, mental health, and environmental health. Emphasis is on application of knowledge through the use of decision-making and behavior modification skills.

**115 Marathoning (3)**

The history, theory, and practice of marathon training and racing.

**EXERCISE AND SPORT ACTIVITIES**

With the exception of undergraduates enrolled in the School of Public Health and Health Services, credit for exercise and sport activities courses is not recognized for the baccalaureate. The University is not responsible for injuries received in any of the activities of these courses, and the student assumes full responsibility therefor.

**10 Badminton (1)**

Students learn the mechanics of the basic skills and practice to improve the execution of a variety of serves, serve returns, clears, drops, drives, and smashes. Strategy for singles, doubles, and mixed doubles play.

**11 Hiking (1)**

Hiking as an element of outdoor education, environmental education, and basic wilderness travel.

**12 Dance Conditioning (1)**

Students learn correct body alignment to execute safe movements through dance conditioning; isolation of major muscle groups; fitness level and life style.

**14 Meditation (1)**

Basic meditation techniques and principles.

**15 Japanese Swordmanship (1)**

Instruction in the proper use of the Japanese sword and introduction to the training regimens of kendo and iaido.

**20 Beginning/Intermediate Golf (1)**

All aspects of the game of golf and its rules. Fundamentals of the golf swing, the short game, and course management. On-course experience. Course fee.

**21 Foil Fencing (1)**

Basic positions and fundamental movements of foil fencing; overview of the entire sport.

**22 Basketball (1)**

Fundamental skills, practice, rules, and scoring.

**24 Volleyball (1)**

Fundamental skills, practice, rules, and scoring.

**26 Karate (1)**

Introduction to Shotokan Karate, with an emphasis on realistic self-defense and development of the mind–body connection. Basic stances, blocks, and strikes of Shotokan.

**28 Massage (1)**

Physiological effects of stress on the muscular system and how massage is used to address these effects. Proper technique and application of Swedish Massage strokes and other related therapies. Course fee.

**29 Yoga (1)**

Introduction to Hatha Yoga; basic postures and breathing.

**30 Fitness—Selected Activities (1)**

**31 Weight Training (1)**

Weight training techniques and related concepts of anatomy, nutrition, and exercise physiology. Emphasis on safety, form, benefits, and personal goals.

**32 Aqua Aerobics (1)**

Aerobic conditioning, muscle toning, and increased flexibility using water resistance.

Emphasis on the positive impact of regular physical fitness.

**33 Swimming (1)**

Basic components of swimming and development of proper stroke mechanics in the four styles of swimming: freestyle, backstroke, breaststroke, and butterfly.

**37 Indoor Soccer (1)**

Technical and tactical aspects of the sport are addressed.

**38 Racquetball (1)**

Rules, basic skills, and strategies.

**39 Cardio-Kick-Boxing (1)**

Exposure to a variety of hand and foot techniques from boxing and traditional martial arts, with an emphasis on learning to work out at a safe and challenging level for improved strength, flexibility, and cardiorespiratory fitness.

**40 Self-Defense and Personal Safety (1)**

Development of an understanding of assault and the wide range of options for self-defense. Drills of verbal assertiveness, concentration/relaxation, and physical defense.

Concepts of alignment, balance, and the mechanics of generating force.

**41 Mat Pilates (1)**

Basic understanding of the principles of Pilates, including postural alignment, breathing techniques, strengthening, and stretching.

**42 Cardio-Conditioning (1)**

A variety of aerobic activity, including step, high/low, hip-hop, sports training, and power walking. Each class includes a warm-up, aerobic segment, and cool down.

**43 Tai Chi (1)**

Introduction to the art of Tai Chi Ch'uan. Focus on the solo form, which is a series of slow, circular, continuous movements. Tai Chi principles, philosophy, and history.

Body alignment, kinetics, and warm-up exercises.

**44 Aikido (1)**

Aikido helps participants deal with stressful and threatening situations and defend themselves if necessary in situations where force and violence is imminent.

**45 Experimental Activities (1)**

Topic and amount of laboratory fee (if charged) announced in Schedule of Classes.

**46 Taekwondo (1)**

The fundamental techniques and training regimen of taekwondo, a Korean martial art.

Beginning students become proficient in the techniques required for a promotion to yellow belt. More advanced students receive training appropriate to their rank.

**47 Bowling (1)**

Basic components and skills for this lifetime sport. Course fee.

**48 Horseback Riding (1)**

Theory and practice for beginning, intermediate, and advanced level students. Course fee.

**49 In-Line Skating (1)**

Students learn to skate and stop, in control and with confidence.

**50 Shiatsu (1)**

Balanced and centered movements are drawn from the martial arts of Tai Chi Ch'uan Aikido, a method of self-development.

**53 Squash (1)**

Basic rules, skills, and the strategies involved in the game. Equipment fee.

**56 Scuba Diving Certification Course (2)**

This is an entry-level PADI (Professional Association of Diving Instructors) course, leading to international diver certification. The student is introduced to the techniques and theories of safe diving in pool and lecture sessions. Course fee.

**57 Scuba Lab (1)**

Open water dive certification lab. Course fee.

**58 Outdoor Education Facilitation (2)**

An outdoor challenge course designed to help groups have fun while coming together to build unity and address challenges such as developing trust, problem solving, goal setting, and communication.

**60 CPR/First Aid (1)**



At the completion of the course the student will be able to address adult, child, and infant choking and perform rescue breathing and CPR techniques as taught by the American Red Cross. Course fee.

**61 Lifeguard Training Certification Course (2)**

Skills and knowledge needed to prevent and respond to aquatic emergencies. Course content and activities prepare lifeguard candidates to recognize and respond quickly and effectively to emergencies and prevent drowning and other incidents. Course fee.

**62 Conditioning/Weight Training (2)**

The fundamentals and theory behind various methods of weight training, cardiovascular fitness, and nutrition.

**65 Introduction to Therapeutic Massage (2)**

Basic Swedish massage and deep-tissue techniques. Course fee.

**66 Sports Massage (2)**

Principles of orthopaedic sports massage, the musculoskeletal conditions that can benefit from it, and performance of these massage techniques. Course fee.

**67 Aerobics Instructor Training (2)**

Fundamentals of instruction for a group exercise leader. Participants develop the skills needed to teach a safe, enjoyable, and effective group exercise class.

**68 Sport Clinics and Workshops (1 to 3)**

Special intensive study and skill development. There may be a laboratory fee, amount announced in Schedule of Classes.

**71 Anatomy for Teachers of Yoga (1)**

Functional anatomy as applied to yoga: muscles and how they move in yoga poses; bones and how they function; the physiology of stretching; the dynamics of breathing; the stress reaction; and anatomy and physiology as they apply to the yogic “energy” body.

**72 Methodology for Teachers of Yoga (1)**

Principles of demonstration, observation, and instruction of postures/asanas. Different teaching and learning styles, appropriate assisting/correcting of students, and qualities of a yoga teacher.

**73 Yoga Technique I (1)**

Teaching basic standing and seated Hatha yoga.

**74 Yoga Technique II (1)**

Teaching basic backward- and forward-bending Hatha yoga postures/asanas.

**75 Yoga Technique III (1)**

Teaching basic inversion and twisting Hatha yoga postures/asanas.

**76 Yoga Teacher Practicum (1)**

A culminating course to help students further develop teaching skills through assisting with instruction of classes taught by a RYA instructor.

**FILM STUDIES**

**Committee on Film Studies**

P. Rollberg (*Chair*), Y. Captain, H. Feigenbaum, R. Guenther, K. Harvey, A. Hildebeitel, N.

Seavey

*Minor in film studies*—Students in Columbian College of Arts and Sciences may earn a minor in film studies by completing the four core courses below plus three additional film

courses chosen from AmSt 192/AH 157, Fren 131, 132, Ger 181, Japn 162, Phil 62, Slav 185, 186, Span 131.

**151 Film Theory (3)**

A reading-intensive immersion in classical film aesthetics and a survey of the theoretical and critical canon of cinema literature. Laboratory fee. (Fall)

**152 Genres of Film (3)**

An exploration of the relationship between cinematic structure and narrative content in various types of film. Laboratory fee. (Spring)

**153–54 History of World Cinema I–II (3–3)**

A two-semester sequence covering 100 years of international cinematic history from an aesthetic and political point of view. Laboratory fee. (Academic year)

**FINANCE**

*Professors* T.M. Barnhill, W. Handorf, M.S. Klock (*Chair*), S. Phillips, I.G. Bajoux-Besnainou, G.M. Jabbour, R.K. Green, R. Van Order

*Associate Professors* N.G. Cohen, P.S. Peyser, A.J. Wilson, R. Savickas, S. Agca, G. Jostova, A. Baptista

*Assistant Professors* M. Hwang, C.A. Pirinsky, B.J. Henderson

*Professorial Lecturers* S. Uyanik, J. Overdahl, R. Strand

See the School of Business for programs of study leading to the degrees of Bachelor of Accountancy and Bachelor of Business Administration.

**Departmental prerequisite:** BAdm 115 is prerequisite to all courses in the Finance Department.

**124 Advanced Financial Management (3)**

Barnhill, Cohen

Analysis and readings covering applications of theory to financial management. Case studies for decision making involving working capital, capital budgeting, financing, dividend policy, and valuation. Prerequisite or concurrent registration: Fina 125 or 127.

(Fall and spring)

**125 Money and Capital Markets (3)** Agca, Wilson

The process of capital formation in a free enterprise economy, with special emphasis on factors affecting the level and structure of interest rates. Money market, capital market, and derivative contracts (futures and swaps) are evaluated from both investment and financing perspectives. (Fall and spring)

**126 Investment and Portfolio Management (3)** Baptista, Klock, Savickas

Theory and principles of security analysis and portfolio management, including analysis of the national economy, industry, company, and security markets. Risk–reward and computer-aided analysis. (Fall and spring)

**127 Intermediate Finance (3)** Wilson

Theory and practice of acquiring and using funds. Simulations of business decisions by cases and/or models to assess the risk/return interaction of investment, financing, and dividend decisions. (Fall and spring)

**132 Real Estate Investment (3)** Hwang

Principles of real estate investment, including valuation, appraisal, financing, and development, in addition to a discussion of the mortgage market and its institutions.

(Fall)

**190 Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods.

**199 Independent Study** (arr.)

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

**FINE ARTS AND ART HISTORY**

*Professors* L.F. Robinson, J.F. Wright, Jr., T. Ozdogan, J.C. Anderson, B. von Barghahn, D.

Bjelajac

*Associate Professors* J.L. Stephanic, P. Jacks, T. Brown (*Chair*), D. Kessmann

*Assistant Professors* A.B. Dumbadze, S.A. Rigg, B.K. Obler

*Bachelor of Arts with a major in art history*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—Fren 4, Ger 4, Ital 4, or Span 4.
3. Required courses in the major—30 credit hours consisting of 6 credits each in ancient–medieval, Renaissance–Baroque, and modern European–American art history; 6 credits of art history seminars; and an additional 6 credits of 100-level courses in art history or, with approval of the advisor, in related departments.

*Bachelor of Arts with a major in fine arts*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Requirements include 9 credit hours of art history courses and 30 credits of fine arts courses; up to 21 additional credits in the department may count toward the degree.

*Bachelor of Arts with a combined major in art history and fine arts*—The following requirements must be fulfilled in consultation with the departmental advisor:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. A total of 54 credit hours in the department: 27 in art history and 27 in fine arts. The art history courses must include AH 31–32 and one course in each of the following areas—ancient–medieval, Renaissance–Baroque, and modern European–American; one seminar; three additional 100-level art history electives.

*Combined Bachelor of Arts with a major in fine arts/Master of Arts in the field of art therapy*—Students interested in this dual degree program should consult the director of the Art Therapy Program early in the junior year.

*Special Honors*—For graduation with Special Honors, students must have attained, by the end of the junior year, a grade-point average of at least 3.5 in the major and 3.0 overall. No later than the beginning of the senior year, students should consult their advisor regarding eligibility and selection of an area of study and a director of the research or creative arts project.

*Minor in art history*—Required: AH 31, 32 and four 100-level art history courses for a total of 18 credits.

*Minor in fine arts*—Required: 18 credit hours of general course work in fine arts. Students should consult the undergraduate fine arts advisor.

*Combined minor in art history and fine arts*—Required: 9–12 credits of course work in art history and 9–12 credits in fine arts, for a total of 21 credits. A program of study is developed in consultation with the undergraduate advisors in art history and fine arts.

With permission, a limited number of fine arts graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

## **ART HISTORY**

**31–32 Survey of Western Art I (3–3)**

Staff

An introduction to the history of art through the study of major monuments, movements, and concepts. AH 31: from the prehistoric period, through the Ancient Mediterranean cultures, including Greece and Rome, to the end of the Middle Ages. AH 32: from the early Renaissance through the Baroque and modern eras.

**71 Introduction to the Arts in America (3)**

Bjelajac

A survey of American art from the period of colonial exploration and settlement to the postmodern present. Political and social meanings of painting, sculpture, architecture, prints, and photographs. The relationship of art to religion and nationalism; issues of class, race, and gender.

**101 Ancient Art of the Bronze Age and Greece (3)**

Staff

A survey of Greek art from the Minoans and Mycenaeans (c. 2000 B.C.) to the age of Alexander (c. 300 B.C.). Relationships among the arts of the different groups in the Aegean area and their impact on Western culture. The Theran volcanic eruption, the “Dorian Invasion,” the portrayal of women, “heroic nudity,” and the assumption of a stylistic chronology.

**102 Ancient Art of the Roman Empire (3)**

Staff

A survey of Roman art from the successors of Alexander the Great (c. 300 B.C.) to the fall of the Roman Empire in the West (c. 300 A.D.). The impact of the Greek world on Roman art and culture; innovations and achievements of the Romans in architecture, portraiture, and historical narrative. Focus on the city of Rome and other areas of the Roman world such as North Africa and Asia.

**103 Art and Archaeology of Egypt and the Near East (3)**

Staff

The great artistic tradition of the Nile Valley and the contemporary civilizations (c. 3000 B.C. to after 1000 B.C.) between the rivers Tigris and Euphrates (present day Iraq). The Pyramid Age, the temples at Karnak and Luxor, the tombs of the Valley of the Kings, and the artistic traditions of the Sumerians, Akkadians, Babylonians, Assyrians, and Persians.

**104 Art and Archaeology of the Aegean Bronze Age (3)** Cline

Excavational and multidisciplinary aspects of classical archaeology. Minoan and Mycenaean civilizations (1700–1200 B.C.). Same as Anth 197.

**106 Art and Archaeology of Israel and Neighboring Lands (3)** Cline

Same as Anth 188.

**109 Seminar in Ancient Art and Architecture (3)** Staff

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

**111 Early Christian and Byzantine Art and Architecture (3)** Anderson

Art of the Mediterranean world following the collapse of Roman administration.

Growth of the basilica and its decoration; the significance of small objects in medieval study. The rise and fall of the East Roman (Byzantine) Empire from Justinian to 1453.

**112 Romanesque and Gothic Art and Architecture (3)** Anderson

The origin of Western art in the Hiberno-Saxon and Carolingian worlds, their relationship to the Ancient heritage and to the contemporary Byzantine art.

Romanesque and Gothic architecture and its sculptural decoration as art historical and social phenomena.

**119 Seminar in Medieval Art and Architecture (3)** Anderson



For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

**120 Italian Art and Architecture of the 13th through 15th Centuries (3)** Jacks

Origins, development, and theoretical foundations of Renaissance painting, sculpture, and architecture (Giotto, Duccio, Masaccio, Donatello, Ghiberti, Brunelleschi, Mantegna, Bellini, Botticelli).

**121 Italian Art and Architecture of the 16th Century (3)** Jacks

The development of the universal genius within the circle of Florence and Rome (Leonardo, Raphael, Michelangelo) and their counterparts in Venice (Giorgione, Titian, Tintoretto, Sansovino, Palladio).

**122 Topics in Early Northern Renaissance** von Barghahn

**Art and Architecture (3)**

Royal and ducal patronage and the Flemish and French masters of the 15th century, including van Eyck, Campin, van der Weyden, Fouquet, van der Goes, Memling, and Gerard David. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**123 Topics in Northern Renaissance Art and Architecture (3)** von Barghahn

Francis I and Fontainebleau Palace, Henry VIII and Hampton Court, Johann Friedrich of Saxony, and the Holy Roman Emperors Maximilian I and Charles V. François Clouet, Hans Holbein, Lucas Cranach, Albrecht Dürer, Pieter Brueghel, Bernard van Orley, and others. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**129 Seminar in Renaissance Art and Architecture (3)** Jacks, von Barghahn

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

**131 Italian Art and Architecture of the 17th Century (3)** Jacks

The Counter-Reformation and creation of the Baroque in painting, sculpture, and architecture in Rome (Carracci, Caravaggio, Bernini, Borromini, Pietro da Cortona), Turin (Guarini, Juvarra), and Venice (Longhena).

**132 Topics in Northern European Art and Architecture of the 17th Century (3)** von Barghahn

Hapsburg Flanders and Brussels under the Spanish archdukes and their patronage of Rubens and his circle. The role of Dutch merchants commissioning secular themes in Utrecht, Haarlem, Delft, Leyden, and Amsterdam from Golden Age artists such as Rembrandt, Vermeer, and Hals. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**134 Topics in Spanish and Portuguese Art through the 16th Century (3)** von Barghahn

The Kingdoms of the Iberian Peninsula from the Reconquest of Granada to the Renaissance Age of Exploration. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**135 Topics in 17th/18th Century Spanish and Portuguese Art (3)** von Barghahn

Secular and sacred art of the Baroque Golden Century or the Rococo Enlightenment. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**139 Seminar in Baroque Art and Architecture (3)** Jacks, von Barghahn

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

**140 European Art of the 18th Century (3)** Bjelajac

Painting, sculpture, and architecture in France, Great Britain, and Italy. Emphasis on Watteau, Chardin, David, Hogarth, Gainsborough, Reynolds, Canaletto, and Tiepolo.

**141 European Art of the Early 19th Century (3)** Robinson

Neoclassicism and Romanticism in the context of Western European political, social, and cultural developments. Emphasis on France, England, and Germany and the representative styles of David, Ingres, Delacroix, Turner, Constable, and Friedrich.

**142 European Art of the Late 19th Century (3)** Robinson

The revolution in style of Realism, Impressionism, and Post-Impressionism in the context of Western European political, social, and cultural developments. Emphasis on representative styles of Courbet, Manet, Monet, Morisot, Repin, Seurat, Cezanne, Van Gogh, and Gauguin.

**143 European Art of the Early 20th Century (3)** Obler

20th-century European painting, sculpture, and architecture, from their origins in the late 19th century through Surrealism. Emphasis on theory. The work of artists such as Matisse, Picasso, Kandinsky, Duchamp, and Mondrian. Prerequisite: AH 32 or 142.

**145 History of Decorative Arts: European Heritage (3)** Staff

Changing styles of European furniture, textiles, ceramics, and glass in the context of general trends in art history and changing patterns in economic, technological, social, and cultural history. From antiquity to the modern age.

**146 Modern Architecture in Europe and America (3)** Jacks

Major developments in architecture and urbanism from the Industrial Revolution to the end of the 20th century.

**149 Seminar in Modern European Art and Architecture (3)** Bjelajac, Robinson, Obler

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

**151 American Art in the Age of Revolution (3)** Bjelajac

American art during the 18th-century “consumer revolution,” the American War for Independence, and the early republic. Emphasis on the socioeconomic and political purposes of art, with focus on Enlightenment symbolism and the visualization of national identity. Prerequisite: AH 32 or 71.

**152 American Art in the Era of National Expansion (3)** Bjelajac

American art from the opening of the Erie Canal in 1825 to the Spanish-American War in 1898. Emphasis on the role of art in the expansion of the United States, exploring issues of race, class, and gender; art and religion. Prerequisite: AH 32 or 71.

**153 American Art of the 20th Century (3)** Dumbadze

20th-century American painting and sculpture from the turn of the century to the beginnings of postmodernism, with focus on the avant garde. Artists of the Stieglitz circle and later modernist movements such as Abstract Expressionism, Pop, Op, Minimal, and Conceptual art. Theory and criticism. Prerequisite: AH 142 or 143.

**154–55 American Architecture (3–3)** Longstreth

Same as AmSt 175–76.

**156 Folk Arts in America (3)** Vlach

Same as AmSt 145.

157 **The American Cinema** (3)

Staff

Same as AmSt 192.

159 **Seminar in American Art and Architecture** (3)

Bjelajac, Dumbadze

For majors in art history; non-majors must have permission of instructor. May be repeated for credit provided the topic differs.

160 **Latin American Art and Architecture** (3)

von Barghahn and Staff

Specific topic to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

161 **History of Decorative Arts: American Heritage** (3)

Staff

The decorative arts in America from the 17th century to the modern period.

Consideration of changing visual characteristics in relation to the changing American experience.

162 **History of Photography** (3)

Obler

The historical, social, aesthetic and technological developments of the photographic medium, including its relationship to modern art and modes of visual representation and the properties that inform our understanding of photographic meaning.

165 **Modernist and Postmodernist Art and Theory** (3)

Dumbadze, Obler

Artists, art forms, and critical concepts from the 1960s to the present, focusing on modernist theory and the development of postmodernist art and thought. Prerequisite: AH 143 or 153.

190 **East Asian Art** (3)

Staff

Survey of the arts of China, Japan, and Korea.

191 **South Asian Art** (3) Staff

Survey of the arts of India, Pakistan, Sri Lanka, Nepal, and Tibet, from prehistoric times to circa 18th century.

192 **The Art of Southeast Asia** (3) Staff

The arts of Southeast Asia—Vietnam, Laos, Cambodia, Myanmar (former Burma), Thailand, and Indonesia, especially Java and Bali. The fusion of Indian and Chinese concepts with indigenous cultural traits.

198 **Independent Study** (3) Staff

Directed research and study in a specific area of art history to be approved by a faculty member. May be repeated for credit.

199 **Internship** (3) Staff

Open to candidates for the B.A. in art history only and with the approval of advisor in art history. May not be repeated for credit toward the degree. May be taken *P/NP* only.

## FINE ARTS

**Note:** Fine arts courses at the 100 level may be repeated for credit with approval of the department. A course fee is charged for all fine arts courses listed here except FA 75, 195, and 199.

11–12 **Design** (3–3) Stephanic and Staff

Fundamental studies of principles and elements of design. FA 11: two-dimensional design. FA 12: three-dimensional design.

14 **Handbuilt Ceramics** (3) Ozdogan and Staff

Working with clay as an art form. Pinch, coil, slab, hump and press mold, paddling, and hollowing techniques. Sketch studies, clay and glaze making, reduction and oxidation kiln firings.

**15 Wheelthrown Ceramics (3)**

Ozdogan and Staff

Development of cylindrical and open forms. Sketch studies, trimming, clay and glaze making, reduction and oxidation kiln firings.

**17–18 Sculpture I–II (3–3)**

Staff

Beginning study of design and fabrication of sculpture. Basic sculptural techniques for various media, including clay, plaster, stone, and wood.

**21–22 Drawing I–II (3–3)**

Brown, Wright, and Staff

Development of a fundamental understanding of line, shape, value, contrast, composition, and mark making. Emphasis on working directly from life, along with a variety of conceptual issues. Consideration of traditional and contemporary strategies and skills toward development of technique, process, and meaning. FA 21 is prerequisite to FA 22.

**26 Painting: Visual Thinking (3)**

Brown and Staff

Development of technical and perceptual skills that are the foundation of visual expression. Beginning projects start with a simple introduction to the mechanics of paint handling: how to begin a painting, apply paint, and model form. Value, line, color, and abstraction.

**27 Painting: Structure and Color (3)**

Brown and Staff

Work based on a variety of approaches. Focus on how images become vital through the qualities inherent to the medium. Prerequisite: FA 21 or 26.

**28 Painting: Watercolor (3)**

Brown and Staff

Working with basic issues of light, color, and paint quality, students learn a variety of techniques, including working transparently, wet-on-wet, wet-on-dry, lifting, masking, and drybrush. Exploration of the medium's inherent qualities as well as those it shares with other painting media.

**41 Black-and-White Photography (3)**

Kessmann and Staff

Introduction to the materials and processes of black-and-white photography. Camera operations, film processing, printing, and presentation methods. Gaining technical skills. Issues concerned with the visual language of photography.

**42 Color Photography (3)**

Kessmann and Staff

Introduction to the materials and processes of color photography. Color theory, exposure techniques, film scanning, digital color correcting, and printing. The use of color as a means of visual communication and creative expression.

**71 New Media: Digital Art (3)**

Rigg, Stephanic, and Staff

A survey of the computer as a creative art tool. Topics covered include bit-mapped and vector graphics, digital sound and imaging, basic time-based media, and digital text, integrated with fundamental design principles of concept development, composition, color theory and presentation.

**75 East Asian Calligraphy (3)**

Staff

Same as EALL 75.

**125 Ceramics: Wheelthrown Forms (3)**

Ozdogan and Staff

Aesthetic and technical development of wheelthrown ceramic forms. Exploration of attachments: lids, spouts, handles, and footing devices. Sketches and technical



drawings, clay and glaze-making tests, varied temperature firings in reduction and oxidation atmospheres. Prerequisite FA 15.

**127 Ceramic Design in Handbuilding (3)** Ozdogan and Staff

Handbuilding techniques of pinch, coil, slab, hump and press mold, paddling, and hollowing. Sketch studies, clay and glaze tests. Orientation to studio operations and maintenance.

**131 Ceramic Sculpture (3)** Ozdogan and Staff

Developing an understanding of the sculptural ceramic form that integrates both quality and creativity. Techniques in hollow and solid construction. Varied temperature firings in reduction and oxidation atmospheres.

**139 Special Topics: Ceramics (3)** Staff

Prerequisite: FA 14 or 15 or permission of instructor.

**140 Sculpture III (3)** Staff

Advanced techniques in a variety of media. Prerequisite: FA 17 or 18.

**149 Special Topics: Sculpture (3)** Staff

Prerequisite: FA 17 or 18 or permission of instructor.

**150 Drawing III (3)** Wright and Staff

Advanced investigation of drawing as an organizing tool for thought, analysis, and personal imagery. Traditional and contemporary approaches to topics related to perceptual and conceptual concerns. Prerequisite: FA 22.

**151 Advanced Drawing Techniques (3)** Wright and Staff

Investigation of the common concerns and creative processes that have dissolved boundaries between drawing and painting in the late 20th century. Prerequisite: FA 150.

159 **Special Topics: Drawing (3)** Staff

Prerequisite: FA 21 or 22 or permission of instructor.

160 **Figure Painting: Observation and Gesture (3)** Brown and Staff

Consideration of the process of vision as mediated through manipulation of paint to form an image. Development of solutions to clarity, articulation, energy, and finish. Prerequisite: FA 26 or 27.

161 **Problems in Color (3)** Brown and Staff

Exploration of the objective rationale and subjective experience of color through the execution of problems in color contrast and color scales. Prerequisite: FA 26 or 27.

162 **Painting: Contemporary Issues (3)** Brown and Staff

Examples from contemporary art serve as starting points for discussion of the creative process. Postmodern strategies to rethink and challenge various hierarchies of subject, style and medium.

169 **Special Topics: Painting (3)** Staff

Prerequisite: FA 26 or 27 or permission of instructor.

170 **Advanced Photography:** Kessmann and Staff

**Exposure and Printing Techniques (3)**

Pre-visualization, accurate exposure and development, and the craft of black-and-white printmaking. Techniques and strategies for creation of a portfolio that is aesthetically and conceptually engaging. Prerequisite: FA 41.

171 **Advanced Photography: Digital Color Printing (3)** Kessmann and Staff

Further development of color theory and the technical skills to make high-quality inkjet prints. Critiques and discussion of contemporary artistic practice. Prerequisite: FA 42.

172 **Photography: Contemporary Issues (3)** Kessmann and Staff

Emphasis on the incorporation of contemporary strategies, trends, and approaches into the student's personal practice. The work of contemporary artists who use photography will inform the work produced. Prerequisite: FA 41 or 42.

179 **Special Topics: Photography (3)** Staff

Prerequisite: FA 41 or 42 or permission of instructor.

180 **New Media: Digital Illustration (3)** Rigg, Stephanic, and Staff

Advanced investigation of two- and three-dimensional drawing and illustration techniques. Print and/or digital portfolio preparation. Prerequisite: FA 71 or permission of instructor.

181 **New Media: Digital Imaging (3)** Rigg, Stephanic, and Staff

Advanced examination of bit-mapped imaging techniques. Methods of electronic dissemination of visual information. Prerequisite: FA 71 or permission of instructor.

182 **New Media: Time-based Visual Expression (3)** Rigg, Stephanic, and Staff

Contemporary two-dimensional animation, video, and multimedia systems and applications, including individual portfolio projects. Prerequisite: FA 71 or permission of instructor.

183 **New Media: Digital Printmaking (3)** Rigg, Stephanic, and Staff

An exploration of digital printmaking techniques, including color profiling.

Prerequisite: FA 71 or permission of instructor.

**184 New Media: Mixed Media (3)**

Rigg, Stephanic, and Staff

Combining digital visualization with traditional mediums, artist bookmaking, collage, assemblage, etc. Prerequisite: FA 71 or permission of instructor.

**189 Special Topics: New Media (3)**

Staff

Prerequisite: FA 71 or permission of instructor.

**193 Professional Practices (3)**

Kessmann

A wide overview of the contemporary art world, including how artists promote their work to galleries, public art organizations, and museums; writing successful grant proposals, artist statements, essays, and reviews; and comparing the quality of venues for art and art journalism.

**195 Critical Practices (3)**

Staff

This structured independent study consists of weekly group critiques that bring together students working in a variety of media. Discussions, which range from practical to aesthetic issues, challenge students to focus and articulate their visual knowledge. Prerequisite: permission of instructor.

**199 Internship (3)**

Staff

Open only to candidates for the B.A. in fine arts with approval of the advisor in fine arts. May not be repeated for credit toward the degree. May be taken *P/NP* only.

## **FORENSIC SCIENCES**

The Department of Forensic Sciences offers graduate degree programs through Columbian College of Arts and Sciences. The following courses are available to undergraduates.

**103–4 Introduction to Forensic Sciences (3–3)**

Staff

Topics in the application of science to the criminal justice system, including personal identification, analysis of drugs, forms of trace evidence, identification of biological fluids, forensic pathology, and forensic toxicology. Prerequisite: two semesters of a laboratory science other than astronomy and permission of instructor.

**190 Topics in Forensic Sciences (3)**

Staff

Prerequisite: Any combination of two courses from BiSc 3–4 or Chem 3–4 or equivalent and junior standing.

**FRENCH**

See **Romance, German, and Slavic Languages and Literatures.**

**GEOGRAPHY**

*Professor* M.D. Price

*Associate Professors* E. Chacko (*Chair*), L.M. Benton-Short, D. Rain

*Assistant Professors* R. Engstrom, M. Atia, M. Keeley, N. Shiklomanov

*Adjunct Professor* J.P. Dymond

*Professorial Lecturers* L. Marcus, I. Cheung, J. Cromartie, C. Gaskin-Reyes

*Lecturers* G. Hofmann, M. Jennings

*Bachelor of Arts with a major in geography*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Required courses in the major—36 credit hours, including Geog 1, 2, 195. A minimum of two courses must be chosen from each of the following groups: Group A

(Physical/Environmental/Resources)—Geog 3, 108, 110, 128, 132, 134, 136, 137, 143; Group B

(Human)—Geog 124, 125, 127, 133, 140, 141, 143, 144, 145, 146, 147, 148, 187; Group C

(Techniques)—Geog 104, 105, 106, 107, 121, 196. At least one course must be chosen from Group D (Regional)—Geog 120, 151, 154, 161, 164, 165.

*Minor in geography*—Required: Geog 1, 2, and one course from each of the groups listed under requirements for the major.

*Minor in geographic information systems*—Required: Geog 1, 2, and four courses from Group C, above.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**1 Introduction to Human Geography (3)** Benton-Short, Chacko, Atia

A systematic survey of human geography; spatial perspectives on demographic, social, cultural, economic, and political changes around the world. (Fall and spring)

**2 Introduction to Physical Geography (4)** Engstrom, Shiklomanov

A systematic survey of environmental geography; perspectives on environments and human ecology, including ecosystems and their use, and resource geography.

Laboratory fee. (Fall and spring)

**3 Society and Environment (3)** Rain, Keeley

An introduction to the dynamic relationship between society and the physical environment, with focus on population, natural resources, environmental degradation, pollution, and conservation.

**104 Introduction to Cartography and GIS (3)** Staff

Fundamentals of cartography; geographic data structure and information systems.

Laboratory fee.

**105 Techniques of Spatial Analysis (3)** Staff

Nature of geographical inquiry and analytical methods used in the study of spatial processes and patterns. Laboratory fee.

**106 Intermediate Geographic Information Systems (3)** Rain, Engstrom

Principles of geographic information systems and their use in spatial analysis and information management. Laboratory fee. Prerequisite: Geog 104 and 105.

**107 Introduction to Remote Sensing (3)** Engstrom

Remote-sensing techniques using digital satellite imagery and aerial photography. Application to rural and urban settings, vegetation, and environmental monitoring. Laboratory fee. Prerequisite: Geog 105 or permission of instructor.

**108 Weather and Climate (3)** Shiklomanov

The elements and controls of weather and climate. Topics include energy and water balances, atmospheric general circulation, and severe weather events. Prerequisite: Geog 2.

**110 Climate and Human Ecology (3)** Staff

Interrelationships between human activities and the climatic environment. Emphasis on global climatic change. Prerequisite: Geog 2.

**120 World Regional Geography (3)** Price, Dymond

World cultural regions and the impacts of globalization; the environmental human conditions that undergird current problems and future prospects.

**121 Advanced Geographic Information Systems (3)** Cheung

Integration of GIS, remote sensing, and spatial modeling. Laboratory fee. Prerequisite: Geog 106.

**124 Urban Transportation (3)** Marcus

The relationship between freight and passenger transportation systems and urban land use patterns and structure. Prerequisite: Geog 1.

**125 Transportation and Communication (3)**

Marcus

The structure and evolution of transportation and communication networks and their impact on regional development. Prerequisite: Geog 1.

**127 Population Geography (3)**

Chacko, Cromartie

Patterns of world population; factors contributing to population pressures, growth, and migrations.

**128 Geomorphology (3)**

Stephens, Shiklomanov

Same as Geol 128.

**132 Environmental Quality and Management (3)**

Keeley

The evolution of environmental management philosophies and tools. The global distribution, utilization, and degradation of natural resources. Prerequisite: Geog 2.

**133 People, Land, and Food (3)**

Staff

Domestication and dispersal of plants and animals; development of agricultural systems; spatial disparities in world food production, demand, and distribution.

**134 Energy Resources (3)**

Staff

Analysis of regional patterns and trends in consumption and production of energy resources. Examination of international energy linkages and energy policies of selected nations. Prerequisite: Geog 2.

**136 Water Resources (3)**

Engstrom

Analysis of the global spatial patterns, development, use, and quality of water resources.



- 137 **Environmental Hazards** (3) Staff  
Examination of environmental hazards with emphasis on the use of geographic information systems. Prerequisite: Geog 2.
- 140 **Cities and Society** (3) Benton-Short  
The design and function of cities in the United States; contemporary, economic, political, and social change. Prerequisite: Geog 1.
- 141 **Cities in the Developing World** (3) Rain  
Urbanization processes, problems, and management in the developing world. Focus on urban location, politics, housing, services, employment, and environmental issues. Prerequisite: Geog 1.
- 143 **Urban Sustainability** (3) Benton-Short, Keeley  
Relationship between urban spaces and the environment through the lens of sustainability. Prerequisite: Geog 1.
- 144 **Explorations in Historical Geography** (3) Staff  
Same as AmSt 144.
- 145 **Cultural Geography** (3) Dymond  
Analysis of the relationships between culture and environment; emphasis on spatial and ecological considerations. Prerequisite: Geog 1.
- 146 **Political Geography** (3) Dymond  
Interrelationships among the human and physical environment and political systems; the organization of political territories.
- 147 **Military Geography** (3) Hofmann

An examination of environmental and locational factors and their impact on military planning and operations.

148 **Economic Geography** (3) Atia

Locational influences on and spatial variation of the development of manufacturing, services, trade, and finance. Prerequisite: Geog 1.

154 **Geography of the Middle East and North Africa** (3) Atia

Cultural and physical regional patterns of the Middle East and North Africa.

Prerequisite: Geog 1 or 2.

161 **Geography of Latin America** (3) Price, Dymond

Examination of spatial characteristics of physical and cultural phenomena in Latin America.

164 **Geography of Africa** (3) Rain

Cultural and physical patterns of Africa. Prerequisite: Geog 1 or 2.

165 **Geography of South Asia** (3) Chacko

An examination of the complex interplay of environmental, economic, sociocultural, and political factors in South Asia and their effects at the local and regional levels.

187 **Building Cities** (3) Benton-Short

An examination of historical and contemporary trends and dynamics in urban planning in the United States and abroad. Prerequisite: Geog 1. Same as AmSt 187.

189–90 **Readings in Geography** (arr.) Staff

Prerequisite: 12 credit hours of geography and permission of instructor.

195 **Proseminar in Geographic Thought** (3) Price

For students completing the major in geography. Development of geographic thought, theories, and methodologies; geographic curricula. Prerequisite: permission of the advisor.

**196 Field Methods in Geography (3)**

Engstrom

Field research in human and physical geography. Students participate in several field exercises and develop their skills of observation, field mapping, repeat photography, and surveys. Laboratory fee. Prerequisite: Geog 1 and 2 and permission of instructor.

**198 Special Topics (3)**

Staff

Consideration of geographic aspects of topical and future problems of society. May be repeated for credit provided that the topic differs. Prerequisite: Geog 1 or 2.

**199 Internship (1 to 3)**

Staff

Fieldwork, internship, or other controlled assignment with an agency or organization engaged in work in applied geography. Prerequisite: 12 credit hours of geography courses and permission of instructor. May be repeated for credit to a maximum of 6 credits.

## **GEOLOGICAL SCIENCES**

### **Committee on Geological Sciences**

H. Teng, R.P. Tollo, J.M. Clark, C.A. Forster, C.E. Brown, G. Mattietti

*Bachelor of Arts with a major in geological sciences*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Geol 1 and 2, or 2 and 5.
3. Required courses in related areas—Chem 11–12.

4. Required courses for the major—Geol 111, 112, 122, 126, and 195, plus three courses chosen with approval of the program advisor from a list of designated courses.

*Bachelor of Science with a major in geological sciences*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Geol 1 and 2, or 2 and 5.
3. Required courses in related areas—Chem 11–12; Phys 11–12 or Astr 1–2; Math 20–21 or 31 or Stat 91. Students who wish to focus their study on geobiology must include BiSc 11–12 in their program.

4. Required courses for the major—Geol 111, 112, 122, 126, and 195, plus four courses chosen with approval of the program advisor from a list of designated courses.

*Special Honors*—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors must maintain a grade-point average of 3.3 both cumulative overall and for courses in the major and must submit an approved Honors thesis.

*Minor in geological sciences*—Prerequisite: Geol 1 and 2, or 2 and 5. The minor consists of Geol 111, 112, 122, 126, and 195.

**1 Physical Geology (3)**

Tollo, Brown

Lecture, laboratory. An introduction to the principal features of the composition and structure of the earth. Topics include the nature of minerals and rocks, surface and deep earth processes, mineral and energy resources, and plate tectonics. Laboratory fee. Credit will not be given for both Geol 1 and 5. (Fall and spring)

**2 Historical Geology (3)**

Forster, Brown

Lecture, laboratory. An introduction to the history of the earth. Topics include sedimentary environments, plate tectonics, origin of life, and evolution. Laboratory fee. Prerequisite: Geol 1 or 5. (Fall and spring)

**5 Environmental Geology (3)** Teng, Brown

Lecture, laboratory. An introduction to the impact of geology on the environment, with emphasis on the relation of people and society to natural environments; population evolution, natural hazards, and mineral resources. Laboratory fee. Credit will not be given for both Geol 1 and 5. (Fall and spring)

**6 Science and the Environment (3)** Teng

The large-scale processes operating within the atmosphere, oceans, and solid Earth. Prerequisite: Geol 1 or 5. (Spring)

**105 Geological Hazards in Land-Use Planning (3)** Mattiotti

Lecture and laboratory. An analysis of geological hazards and related factors that affect land-use planning. Field trip. Prerequisite: Geol 1 or 5 or permission of instructor. Laboratory fee. (Spring)

**106 Oceanography (3)** Brown

The ocean with its many environments represents the last largely unexplored frontier on earth. Principles and theory of oceanography covered include the origin of the ocean systems and plate tectonics, ocean habitats and their biota, marine hydrology and ocean currents; air-sea interaction and climate control; ocean mapping techniques; environmental regulations covering marine resources. Laboratory fee. Prerequisite: Geol 1 or 5. (Spring, alternate years)

**111 Mineralogy (4)** Tollo

Lecture and laboratory. Introduction to the crystallography and chemical systematics of rock-forming and ore minerals. Exercises emphasize the analysis of mineralogic data and the paragenesis of mineral assemblages. Prerequisite: Geol 1 or 5 or permission of instructor. Laboratory fee. (Fall)

**112 Igneous and Metamorphic Petrology (4)** Tollo

Lecture and laboratory. Introduction to basic light theory and the identification and characterization of minerals through optical properties. Laboratory exercises provide an introduction to petrologic analysis of igneous and metamorphic mineral systems. Prerequisite: Geol 111 or permission of the instructor. Laboratory fee. (Spring)

**118 Volcanology (3)** Tollo

Introduction to the fundamental principles and geologic processes associated with volcanism. Topics include eruptive styles, processes leading to magma production and transport, triggering mechanisms, plate tectonic settings, volcanic hazards, and disaster mitigation. Case histories of selected volcanic eruptions examined in detail. Prerequisite: Geol 111 or permission of instructor. Laboratory fee. (Spring)

**122 Structural Geology (3)** Staff

Lecture and laboratory. Study of natural and experimental rock deformation and the relationships between stress and strain as recorded by geologic structures. Prerequisite: Geol 1 or 5. Laboratory fee. (Fall)

**123 Crustal Dynamics (3)** Staff

Basic plate tectonic processes and features; the plate tectonic paradigm in historical evolutionary framework. Students present an original research project orally and in writing. Prerequisite: Geol 122. Laboratory fee.

**126 Sedimentology and Stratigraphy (4)** Forster

Lecture and laboratory. Introduction to sedimentation and stratigraphy; origin and classification of sediments and sedimentary rocks; introduction to clastic and carbonate depositional environments and stratigraphic principles. Laboratory fee. Prerequisite: Geol 2, 111. (Fall)

**128 Geomorphology (3)** Staff

Understanding the nature, origin, and development of landforms in the field and through the use of maps and aerial photos. Prerequisite: Geol 1. Same as Geog 128. (Spring, even years)

**131 Global Climate Change (3)** Staff

Fundamental causes and patterns of climate change. Methods of reconstruction of past climates; modeling and predicting climate change. (Spring)

**138 Hydrogeology (3)** Brown

Principles and theory of basic and applied hydrology, including surface water hydrology, geology of groundwater systems, groundwater flow, surface water–groundwater interactions, groundwater contamination and remediation technologies, water resources conservation and management, and pertinent regulations. Laboratory fee. Prerequisite: Geol 1 or 5. (Spring, alternate years)

**140 Geochemistry (3)** Teng

Chemical systems and processes on the planet Earth; origins and interactions among and within the Earth's lithosphere, oceans, and atmosphere; origin, distribution, and behavior of the elements; radioactive and stable isotope systems. Aqueous

geochemistry; geochemical cycles. Prerequisite: Geol 1 or 5; Chem 11–12 or equivalent. Same as Chem 140.

**151 History of Life (3)**

Forster

A review of the origin of life, the geologic record, and the evolutionary history of the major groups of organisms, including the origin of life and evolution of invertebrates, vertebrates, and plants. Prerequisite: Geol 1 or 2 or BiSc 11–12. Laboratory fee.

(Spring)

**159 Geobotanical Ecology of the Central Appalachians (4)**

Tollo, Wells

A multidisciplinary approach to Appalachian ecology involving application of scientific principles from both geology and botany, stressing interrelationships between geological, geochemical, and biological processes. Field trips. Laboratory fee.

Prerequisite: Geol 1 or 5 and BiSc 11–12; or equivalent with permission of instructor.

Same as BiSc 159. (Spring, odd years)

**189 Geophysics (3)**

Staff

Principles of magnetic, gravity, seismic and electrical methods applied to geological problem-solving. Prerequisite: Geol 122 or permission of instructor. (Spring)

**190 Special Topics (1 to 3)**

Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**195 Geological Field Methods (4)**

Tollo

Weekend field trips. Methods of outcrop analysis, geologic mapping, and data interpretation. The geological evolution of the central Appalachian mountains and the



plate tectonic processes responsible for their formation emphasized. Field trip fee.

Prerequisite: Geol 111, 122. (Spring)

**199 Undergraduate Research or Reading (arr.)**

Staff

Problems approved by the staff. May be repeated for credit.

**GERMAN**

See **Romance, German, and Slavic Languages and Literatures.**

**GREEK**

See **Classical and Near Eastern Languages and Civilizations.**

**HEALTH SCIENCES**

The following courses, offered by the Health Sciences Programs in the School of Medicine and Health Sciences, are available to undergraduates across the University and pertain to the secondary field in health sciences. Prerequisites may be established for the courses. For information on bachelor's degree programs in health sciences, please contact the Office of Admissions, Health Sciences Programs, School of Medicine and Health Sciences.

**101 Psychosocial Aspects of Health and Illness (3)**

Comprehensive introduction to the psychological and social aspects of health and wellness. Emphasis on the development of communication skills and the establishment of caring relationships. Discussions of special situations such as working with dying patients and patients with self-destructive behaviors.

**102 Pathophysiology (3)**

Biomedical and scientific framework for the understanding of human disease mechanisms and biologic processes. Overview of infectious, immunologic,

cardiovascular, genetic, respiratory, gastrointestinal, neoplastic, reproductive, renal, hematologic, neurologic, and musculoskeletal diseases.

**103 Health Policy and the Health Care System (3)**

Incorporates economic theory and policy analysis methodology to analyze the impact of changes in the health care system on the practice of health sciences professionals and the quality and process of health care. Development of critical thinking skills through review of current medical literature.

**104 Management of Health Science Services (3)**

Application of management and organizational principles to the delivery of services provided by health sciences disciplines. Issues addressed include information systems, leadership, team building, fiscal management, human resources management, quality improvement, and management of conflict and change.

**105 Ethics for Health Professionals (3)**

Basic issues, approaches, and requirements of ethically acceptable decision making with patients, including patient confidentiality, conflicts of interest, allocation of scarce resources, occupational risks in health care, and professional responsibility for overall quality of care.

**HEBREW**

See **Classical and Near Eastern Languages and Civilizations.**

**HISTORY**

*University Professor V.N. Gamble*

*Professors* R. Thornton, P.F. Klarén, R.E. Kennedy, Jr., W.H. Becker (*Chair*), L.P. Ribuffo, E.

Berkowitz, R.H. Spector, L.L. Peck, R.J. Cottrol, D.K. Kennedy, A.M. Black (*Research*),

M.A. Atkin, T. Anbinder, H.L. Agnew, A.J. Hildebeitel, E. Arnesen, J. Weissman Joselit

*Associate Professors* R.B. Stott, E.A. McCord, C.E. Harrison, D.R. Khoury, J. Hershberg, D.

Yang, S. McHale, H.M. Harrison, E.H. Cline, N. Blyden, A. Zimmerman, M. Norton, D.

Silverman, G.A. Brazinsky, K. Schultheiss

*Assistant Professors* C. Klemek, S.N. Robinson, D. Schwartz, A. Smith II, E. Chapman

*Adjunct Professors* K. Bowling, A. Howard, C.T. Long, L. Strauss

*Professorial Lecturer* S. Wells

*Bachelor of Arts with a major in history*—The following requirements must be fulfilled:

1. The general requirements of Columbian College of Arts and Sciences.
2. Required courses in related areas—Two semesters of a single foreign language or placement into the third semester of a foreign language by examination.
3. Three introductory courses chosen from Hist 38, 39, 40, 71, 72. Credit in lieu of these courses may be obtained by scoring 4 or 5 on the Advanced Placement Examination; waiver for these courses may be obtained by scoring 650 or above on the SAT World or American History test. Neither waiver nor credit is awarded by CLEP subject examination.
4. Majors must complete Hist 102 and either 191 or 199. Eight courses must be chosen from groups (a), (b), and (c), below, with the following distribution: at least two courses from each group, with the other two courses chosen from any of the three groups. Of all the courses taken for the major, one must focus on the period before 1750; such courses include Hist 103, 107 through 111, 118, 123, 141, 145, 149, 151, 153, 154, 163, and 168. Hist 39 and certain offerings of Hist 101 and 102 may also fulfill the period requirement.

(a) Europe—Hist 109, 110, 111, 117, 123, 124, 132, 135, 136, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 156, 158, 159, 161, 180

(b) United States—Hist 125, 126, 127, 129, 130, 133, 134, 137, 138, 139, 140, 160, 162, 166, 168, 169, 170, 171, 172, 173, 175, 176, 177, 178, 180, 181, 182, 183, 184, 185, 186, 771, 772

(c) Asia, Africa, Middle East, and Latin America—Hist 103, 104, 105, 106, 107, 108, 116, 117, 118, 126, 158, 161, 163, 164, 183, 187, 188, 189, 190, 193, 194, 195, 196

Each section of Hist 101 fulfills one category of the requirements. Some courses in the 700 and 800 series also fulfill the requirements; check with the major advisor on the applicability of such courses.

*Special Honors*—For Special Honors in history, a history major must (1) meet the general honors requirements listed under University Regulations; (2) have an overall GPA of 3.3 and a GPA of 3.5 in the major at the time of graduation; (3) complete Hist 191 with a grade of *A* or *A–*.

*Minor in history*—Undergraduate students who select a minor in history must ordinarily declare their intention to a departmental advisor no later than the beginning of their senior year. To meet the departmental requirements for a minor, the student must complete one course chosen from Hist 38, 39, 40, 71, or 72 and at least five 100-level history courses.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Course Accessibility:** All 100-level courses are open to students without history course prerequisites with the exception of Hist 191, 192, and 199.

An introduction to world history over the past half millennium, stressing themes of exchange and integration, tracing the ways various peoples of the world became bound together in a common system.

**39–40 European Civilization in Its World Context (3–3)** Staff

Introduction to the history of Europe, emphasizing primary sources and their interpretation. Hist 39: from the beginning of written culture through 1715. Hist 40: from 1715 to the present.

**42 Women in Western Civilization (3)** Staff

Same as WStu 1.

**71–72 Introduction to American History (3–3)** Staff

The political, social, economic, and cultural history of the United States. Hist 71: from the earliest settlements to 1876. Hist 72: from 1876 to present.

**101 Special Topics (3)** Staff

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**102 Sophomore Seminar (3)** Staff

Required of history majors. Topics announced in the Schedule of Classes. Usually taken in the sophomore year. May not be repeated for credit.

**103 African History to 1880 (3)** Blyden

Survey of the history of the African continent with emphasis on the history of sub-Saharan Africa.

**104 Topics in African History since 1880 (3)** Blyden

A survey of African history from 1880 to the present.

**105 Africans in the Making of the Atlantic World (3)** Blyden

The role of Africa and Africans in the Atlantic world with emphasis on links between Africa, Europe, and the Americas.

**106 Women in Africa (3)** Blyden

African women from prehistory to the present, focusing on culture, the role of gender, and outside influences and their impact on women's history. Same as WStu 166.

**107 The Ancient Near East and Egypt to 322 B.C. (3)** Cline

Survey of Egyptian, Mesopotamian, Anatolian, West Semitic, and Iranian civilizations from the Neolithic period to Alexander's conquest. Same as Clas 107.

**108 History of Ancient Israel (3)** Cline

The history of ancient Israel from the Patriarchs through the Romans. Topics include historical, archeological, political, social, cultural, religious, diplomatic, military, economic, and intellectual events, movements, and relationships. Same as Clas 108.

**109 Early Aegean and Greek Civilizations to 338 B.C. (3)** Cline

Neolithic background; Bronze Age—Minoan, Helladic, and Mycenaean civilizations; classical Greek civilization to the Macedonian conquest. Same as Clas 109.

**110 The Roman World to 337 A.D. (3)** Cline, Smith

Prehistoric Italy; rise and decline of the Roman Empire and Latin civilization; cultural, social, and political developments in the Greek world under Roman rule. Same as Clas 110.

**111 The Middle Ages: 500–1500 (3)** Staff

The evolution of European society from the end of the Roman Empire to the Renaissance. The nature of political power, role of religion, place of gender, cultural production, and changing social structures.

112 **Topics in Ancient History (3)** Cline, Smith

Same as Clas 112.

113 **Early American Cultural History (3)** Staff

Same as AmSt 101.

114 **Modern American Cultural History (3)** Staff

Same as AmSt 102.

116 **West Africa to Independence (3)** Blyden

A thematic survey of West African history, focusing on the diversity of African culture, West African kingdoms and empires, Islam, the trans-Saharan trade, African contact with Europe, slavery and the slave trade, and the colonization of Africa.

117 **The British Empire (3)** D. Kennedy

The British Empire from its rise in the 17th century to its demise in the 20th century.

118 **China to 1800 (3)** McCord

Survey of Chinese civilization from its ancient beginnings to the last imperial dynasty.

119 **19th-Century Europe (3)** Zimmerman, Schwartz

Exploration of primary source documents and works of professional historians to introduce important issues of 19th-century European history.

120 **Writing Modern Chinese History (3)** Thornton

Seminar. Students prepare a research paper on selected topics in the history of modern China.

123–24 **European Intellectual History (3–3)** E. Kennedy

Hist 123: The “Century of Genius” and the Enlightenment; God, nature, man, and society, from Descartes to the French Revolution. Hist 124: Responses to the French Revolution and the Enlightenment; historicism, evolution; nihilism, psychoanalysis; communism; fascism; existentialism, structuralism, postmodernism, and neo-orthodoxy.

125 **20th-Century U.S. Immigration (3)** Staff

Same as AmSt 125.

126 **The United States and the Wars in Indochina, 1945–1975 (3)** Spector

The American role in the Indochina Wars, emphasizing the period 1961–1975, and from the perspectives of the Vietnamese, French, and Americans in Vietnam. Related intellectual and political developments in the United States; Cold War relationships with China and the Soviet Union.

127 **The Cold War in the Third World (3)** Brazinsky

The evolution of the Cold War in Asia, Africa, and Latin America. Decolonization and the response of the Great Powers, the political economy of the Third World, and American and Soviet interventions.

128 **Writing Cold War History (3)** Thornton

Seminar. Students prepare a research paper on selected topics in the history of the Cold War.

129 **War and the Military in American Society  
from the Revolution to the Gulf War (3)** Spector

Social and psychological dimensions of war and military service.



- 130 **Sexuality in U.S. History** (3) Staff  
Same as AmSt/WStu 130.
- 132 **History of Germany** (3) Zimmerman  
Political, social, and cultural development. From 1815 to the present.
- 133 **U.S. History, 1890–1945** (3) Ribuffo, Berkowitz  
Political, social, diplomatic, and intellectual developments, with particular emphasis on the “searching” ’20s and New Deal.
- 134 **Contemporary U.S. History Since 1945** (3) Ribuffo  
Political, social, diplomatic, and intellectual developments, with particular emphasis on the Cold War, “silent” ’50s, and disrupted ’60s.
- 135 **The Two Germanys and the Cold War** (3) H. Harrison  
Why was Germany divided after World War II? Why did it stay divided for 45 years? How was it reunited in 1990? This course examines developments in East and West Germany, relations between the two Germanys during the Cold War, their foreign policies, and how other countries treated them.
- 136 **Europe in the 20th Century** (3) Schultheiss  
Diplomatic, political, and cultural developments from the turn of the century to the present.
- 137–38 **History of American Foreign Policy Since World War II** (3–3) Thornton  
Emphasis on American and Soviet strategy and foreign policy in the era of the Cold War. Hist 137: World War II to the Vietnam War; Hist 138: Vietnam to the “New World Order.”
- 139–40 **Women in the United States** (3–3) Murphy, C. Harrison

Survey of women's experience in U.S. history, the way gender has organized relations of power, and the impact of race, region, class, and ethnicity on women and on gender roles. Same as AmSt/WStu 139–40.

141–42 **History of France (3–3)**

E. Kennedy, Schultheiss

Hist 141: Old Regime: monarchy and social classes; the Church; the Enlightenment; the 1789 revolution; Napoleon. Hist 142: From 1814: breaks and continuities in the succession of regimes; the interplay between revolution and tradition; the weakened international position of France; Gaullism and the survival of France; European Unity.

143 **The Making of the Modern Balkans (3)**

Agnew

States of the Balkan peninsula—Slovenia, Croatia, Serbia and Montenegro, Bosnia, Albania, Macedonia, Greece, Bulgaria, and Romania—including developments since the decline of the Ottoman Empire and the emergence of Balkan nationalist movements, and continuing through the collapse of the Soviet bloc.

144 **The Habsburgs in East Central Europe (3)**

Agnew

History of the Habsburg monarchy in its East Central European context. Reformation and Counter-Reformation; conflict with the Ottoman Empire; great-power competition in Europe; response to the Enlightenment and the French Revolution; the rise of nationalism; and final dissolution in World War I.

145 **Russia to 1801 (3)**

Atkin

Survey of Russian history from the rise of the Kievan confederation in the ninth century to the establishment of Imperial Russia as a European great power. Attention will be given to the political, socioeconomic, and cultural history of the East Slavs, especially the Russians.

- 146 **Russia Since 1801** (3) Atkin  
Survey of Russian and Soviet history from the reign of Alexander I to the Stalin era.  
Attention will be given to the contending forces of revolution, reform, and conservatism; diplomatic relations; economic development; and social change.
- 147 **Victorian Britain** (3) D. Kennedy  
Major themes in 19th-century British history: industrialism, democratization, urbanization, imperial expansion, class and gender schisms.
- 148 **The French Revolution** (3) E. Kennedy  
Social, political, economic, and cultural history of the decade of revolution, 1789–1799. Attention to its structural consequences in France and in Europe at large.
- 149 **Spain and Its Empire, 1492–1700** (3) Norton  
Major transformations of the period: from cultural pluralism to ethnic homogeneity, from medieval fragmentation to imperial expansion in Europe and America; from religious reform to Catholic Reformation, from global dominance to decline.
- 150 **20th-Century Britain** (3) D. Kennedy  
Major themes of 20th-century British history: industrial decline, imperialism and decolonization, the making of a welfare state, the cataclysm of global war, integration with Europe.
- 151–52 **History of England** (3–3) Peck  
Development of English civilization and its impact on Western culture. Hist 151: To 1689. Hist 152: Since 1689.
- 153 **Tudor England** (3) Peck

Aspects of the constitutional, social, intellectual, economic, and religious development of England, 1485–1603.

154 **Stuart England** (3)

Peck

The civil wars, Restoration, and Glorious Revolution. Political, religious, socioeconomic, and intellectual developments in England, 1603–1714.

155 **Folger Seminar** (3)

Staff

The history of books and early modern culture. Use of the archive at the Folger Shakespeare Library. Students must obtain departmental approval in the preceding semester. Same as Engl 191.

156 **European Integration: A History** (3)

Wells

An examination of the origins and development of the European Union.

157 **History of Iraq** (3)

Khoury

Modern Iraq's Ottoman background; its incorporation into a world market dominated by Europe, British influence and preconceptions in the creation of Iraq, and the emergence and survival of the Ba'ath dictatorship. Reforms in economic, political, and educational spheres.

158 **Modern Jewish History** (3)

Schwartz

A secular history of the Jewish people from the 18th century to the present state of Israel; emphasis on European and Middle Eastern political, economic, and cultural influences.

159 **The Holocaust** (3)

Schwartz

The origins, causes, and significance of the Nazi attempt to destroy European Jewry, within the context of European and Jewish history. Related themes include the

behavior of perpetrators, victims, and bystanders; literary responses; contemporary implications of the Holocaust for religion and politics.

160 **History of the Jewish People in America (3)** Staff

The study of the Jewish minority in America from colonial times to the present.

Emphasis on the interaction between a powerful majority culture and that of protean minority people.

161 **History of Israel (3)** Schwartz

A history of Israel from the origins of Zionism and the British Mandate through the Oslo Accord and its legacy.

162 **U.S. Religion and Politics (3)** Staff

Same as AmSt 162.

163–64 **History of Latin America (3–3)** Klarén

Hist 163: Analysis of Spanish and Portuguese imperialism in the New World, 1492–

1820. Hist 164: A problems approach to Latin America, 1820 to the present; thematic emphasis on neocolonialism, corporatism, liberalism, *caudillismo*, modernization, populism, and revolution.

165 **George Washington and His World (3)** Bowling

George Washington's life as soldier, politician, entrepreneur, slave holder, and national icon. Emphasis on the interpretation of original sources, including historical documents and the material culture of Washington's Mount Vernon estate, with tours and lectures by curators and historians. Departmental permission is required for registration.

166 **Immigration, Ethnicity, and the American Experience (3)** Anbinder

Examination of the role of immigration, ethnicity, and ethnic conflict in American life, with particular attention to the urban immigrant experience from 1820 to 1924.

168 **America Before 1764** (3) Silverman

An examination of prehistory, colonization, and the shifting dynamics among European Americans, African Americans, and Native Americans before 1764.

169 **Revolutionary America** (3) Silverman

An examination of the War of Independence and other events that reshaped life for Native Americans, African Americans, and European Americans in the era of the American Revolution; emphasis on a continental approach to the period.

170 **The American City** (3) Staff

Same as AmSt 170.

171–72 **U.S. Social History** (3–3) Stott

Hist 171: Daily life, institutions, intellectual and artistic achievements of the agrarian era, 1607–1861. Hist 172: The urban–industrial era from 1861 to present. Same as AmSt 171–72.

173 **African American History** (3) Chapman

Survey of the African American experience, emphasizing the contributions of black Americans to and their impact upon American history. Same as AmSt 173.

175 **U.S. Constitutional History** (3) C. Harrison

Examination of the text and interpretation of the document that is the foundation of the American government, with special attention to the changing character of race and gender as constitutional classes.

176 **The Modern American Presidency** (3) Berkowitz

The development of the modern American presidency, from Theodore Roosevelt to Bill Clinton, examining the intersection of personal and impersonal forces in the creation of modern America.

177 **The Jacksonian Era and the Rise of Mass Politics** (3) Anbinder, Stott

The period 1828–1850 and its continuing significance to American society; emphasis on national politics and the emerging sectional conflict.

178 **History of the American West** (3) Stott

The interaction of environment and cultures among the different peoples vying for occupancy of the trans-Mississippi region of the United States from the early 19th century to the present.

180 **The Nuclear Arms Race** (3) Hershberg

Political, military, diplomatic, scientific, and cultural consequences of the advent of nuclear weapons. The development and uses of the atomic bomb during World War II and the course and legacy of the U.S.–Soviet nuclear arms race during the Cold War.

181 **U.S. Media and Cultural History** (3) Staff

Same as AmSt 181.

182 **U.S. Diplomatic History** (3) Hershberg, Brazinsky

American foreign relations in the 20th century.

183 **International History of the Cold War** (3) H. Harrison, Hershberg

Key events and themes of the Cold War, drawing on new evidence from U.S., Soviet, Chinese, German, East European, Vietnamese, Cuban, and other sources. Related historiographical controversies from multiple national perspectives. Why the Cold War began, why it lasted for 45 years, and why it ended.

- 184 **Civil War and Reconstruction** (3) Anbinder  
How tensions between the sections developed into violence, how a total war was fought on American soil, and how Reconstruction shaped the making of modern American politics and race relations.
- 185 **Black Women in U.S. History** (3) Chapman  
Black Women from the Middle Passage to contemporary times. Same as AmSt/WStu 185.
- 186 **U.S. Urban History** (3) Heap, Klemek  
The American city from colonial foundations to the present, relating social and economic forces to physical form. Special emphasis on transitions from preindustrial to industrial to metropolitan forms, focusing on implications for public policy and historic preservation. Same as AmSt 186.
- 187 **History of Modern China** (3) McCord  
China since 1840, with particular attention to political developments.
- 188 **History of Chinese Communism** (3) Thornton  
Survey of the leadership, ideology, structure, and foreign and domestic policies of the Chinese Communist Party from its inception to the present.
- 189 **History of Modern Japan** (3) Yang  
Japan's century of modernization—from the Meiji Restoration of 1868 to the present. Emphasis on historical, political, economic, and cultural factors.
- 190 **History of Korea** (3) Staff  
An introduction to the history and culture of Korea from antiquity to the present.
- 191 **Senior Honors Thesis** (3) Staff



Required of and open only to undergraduate honors candidates in history. Prerequisite: permission of the thesis director must be obtained the semester before registration.

192 **Internship** (1 to 3) Staff

Study of history through internships in museums, libraries, Congress, or other appropriate institutions and agencies. Prerequisite: approval of a departmental faculty member.

193 **History of the Middle East to 1800** (3) Khoury

Byzantine, Arab, Persian, and Islamic backgrounds; rise and decline of the Ottoman Empire; action of European powers in the area; Ottoman breakup into the Turkish Republic and other states.

194 **The Middle East in the 20th Century** (3) Robinson

The state system established after World War I. Effects of colonialism, the rise of nationalism, the Cold War, and the oil industry. The modes of identification that accompanied these processes, including pan-Arabism and Islamism.

195 **History of Central Asia** (3) Atkin

Introduction to the political, cultural, religious, and social history of the region, including Afghanistan, Kazakhstan, Tajikistan, Turkmenistan, and Uzbekistan.

196 **History of Southeast Asia** (3) McHale

An examination of Vietnam and its neighbors from the pre-colonial period to the present.

197 **Independent Study** (1 to 3) Staff

Permission of instructor required.

199 **Thesis Seminar** (3) Staff

For history majors only. Preparation of a research paper using primary sources.

771 **Epidemics in American History (3)** Gamble

See the University Professors course listing.

772 **American Medicine and Public Health:  
African American Experiences (3)** Gamble

See the University Professors course listing.

773 **History of 20th-Century American Medicine (3)** Gamble

See the University Professors course listing.

## **HONORS**

*Executive Director* M. Frawley

*Assistant Professors* W. Winstead, R. Shepherd, G. Van Cleemput, E. Aviv

### **University Honors Advisory Committee**

B. Berman, N. Blyden, J. Green-Lewis, R. Heller, G. Jostova, M. Mochizuki, J. Rivera, R. Vallance

The University Honors Program offers exceptional entering students the opportunity to engage in a distinctive, participatory program of study and conversation designed to prepare them—whatever their gifts and interests might be—to meet the complex challenges of the 21st century. The program invites students to develop a humane perspective on the world. It sustains a community where students and faculty learn from each other inspired by academic challenge, hard questions, and a desire to make a difference. The program serves approximately 500 selected students, or five percent of GW's undergraduate student body. Incoming students may apply to the Honors Program at the time they apply to the University.

The program is characterized by small, seminar-style classes with enrollments capped at 15–20 students; faculty who serve as mentors, models, and guides in the learning process; problem-, question-, or case-based classroom approaches that call upon students to initiate inquiry, work collaboratively, and drive the exploration and learning process; interdisciplinary tools and modes of inquiry; and global or cross-cultural perspectives and course content.

Honors Program students enroll in the proseminar sequence, Honr 15–16 and 33–34 in the first year and Honr 47–48 and 53–54 in the second, third, or fourth years. In the third and fourth years, they pursue course work in their majors, including special or departmental honors and/or independent or mentored research. All Honors students participate in the capstone course, Honr 199 and complete a departmental or Honors senior thesis or project. Honr 23, Honors Quantitative Reasoning, is an elective that students may choose to take at any time. The Honors proseminars meet certain general curriculum and elective requirements of the respective undergraduate schools. Honr 15 is the required University Writing course for Honors students.

In order to remain in good standing, Honors Program students must enroll in at least 12 credit hours each semester and, except for the first year, maintain a cumulative GPA of 3.4 or higher. First-year students must achieve a cumulative GPA of at least 3.0. Successful participation in the program is recognized and recorded on a student's official transcript.

**15 Honors Proseminar: UW 20: Origins and Evolution of Modern Thought (4)**

Exploration of significant exemplars, milestones, and developments of human thought; foundational and representative thinkers and texts from Western and Eastern traditions provide an indication of the diversity and complexity of attempts to articulate responses to universal questions, problems, and aspirations.

**16 Honors Proseminar: Origins and Evolution of Modern Thought (4)**

Continuation of Honr 15. Key developments and trajectories in human thought and inquiry into modern times.

**23 Honors Proseminar: Quantitative Reasoning (4)**

Drawing on quantitative methods and logical mathematical or statistical reasoning in their intellectual endeavors, students learn to use logical and quantitative analysis for prediction, explanation, and decision making. Topics may be drawn from genetics, epidemiology, gambling theory, disaster prediction, and voting theory.

**33–34 Honors Proseminar: Scientific Reasoning and Discovery (4–4)**

Using an inquiry-based approach, students learn to identify hidden regularities and patterns in nature that may indicate fundamental unifying principles and laws. The scientific method; evaluation of scientific information; limitations of the scientific process; development of a scientific hypothesis. Tools and methodologies of geology, chemistry, physics, biology, anthropology, and other disciplines.

**47–48 Honors Proseminar: Social and Behavioral Sciences (3–3)**

Using the tools and modes of inquiry of the social and behavioral sciences, students find ways to understand significant social and political phenomena. Relationships among individuals, collectivities, families, and communities; interactions of psychological, social, political, economic, and historical forces at work in a given culture.

**53–54 Honors Proseminar: Arts and World Cultures (3–3)**

Using an array of artistic forms (poetry, prose literature, drama, film, painting, sculpture, architecture, dance, and music), students explore the ways cultures are

defined and understood through artistic expression, and the ways in which particular cultures value and critique these forms of personal and social expression.

**175 Honors Special Topics (1 to 4)**

**184 Honors Undergraduate Research (1 to 4)**

Independent or faculty-mentored research resulting in a significant written or other product. (Fall and spring)

**185 Honors Research Assistantship (1 to 4)**

Students provide substantive assistance to a faculty member engaged in scholarly or scientific research.

**198 Honors Senior Thesis (3 or 4)**

One- or two-semester thesis under faculty guidance. May be repeated for credit.

**199 Honors Capstone Experience (4)**

Students work collaboratively on solutions and resolutions to important, current, and complex real-world problems and policy issues.

**HUMANITIES**

**1 Roots of the Western Tradition (3)**

Cook

Basic ideas of Western thought from early Greek, Roman, Judaic, and Christian traditions. Representative readings in drama, epic, historical writings, oratory, creation stories, scriptural traditions, philosophy, and spiritual autobiography.

**2 Ideas in Western Culture: Aquinas to Locke (3)**

Staff

An examination in historical context of central texts from the Middle Ages, the Renaissance, and the Enlightenment: Aquinas, Dante, Machiavelli, Erasmus, Luther, Montaigne, Bacon, Shakespeare, Rabelais, Descartes, Milton, and Locke.

**3 The Enlightenment (3)**

Ganz

Primary works representative of 18th-century European and American culture, examined from thematic and historical perspectives. Music, drama, poetry, the novel, art, architecture, economics, philosophy, and science are among the subjects included; 18th-century notions of Nature, reason, liberty, equality, natural law, and the question of human perfectibility.

**4 Romanticism and Revolution: The 19th Century (3)**

Plotz

Major themes of 19th-century culture from 1789 to 1900 in representative works of European and American art, literature, music, drama, philosophy, and theology. The 19th-century resources of Washington—museums, monuments, collections, concerts, plays—form part of the curriculum.

**5 The 20th-Century Consciousness (3)**

Staff

Major themes and paradigms of 20th-century civilization as expressed in key literary and philosophic texts, visual arts, music, and cultural artifacts. Key issues include the meaning of history in the age of two world wars; the Holocaust and the crisis of reason; the authority of science; the decline of Western hegemony; modernism and postmodernism.

**6 Asian Humanities (3)**

Chaves, Kim-Renaud

The traditional art and literature of the cultures of South Asia (India, Pakistan, Sri Lanka, Tibet) and East Asia (China, Korea, Japan). Attention to religious and philosophical systems as well as to continuities and changes in modern Asian culture.

**7 Africana Humanities (3)**

Blyden

An interdisciplinary introduction to the study of people of Africa and the African Diaspora in historical context. Links in the cultural, political, and intellectual experiences of people of African descent in the Americas, Caribbean, Europe, and Africa.

**8 Islamic Humanities (3)**

Khoury

Facets of Islamic civilization, including the defining features of the Islamic tradition and the history within which it has unfolded. The diversity within the Islamic community is considered, especially in its encounter with modernity.

**INFORMATION SYSTEMS AND TECHNOLOGY MANAGEMENT**

*Professors* J.H. Carson, E.J. Cherian, M.J. Granger, E.G. Carayannis

*Associate Professors* R.G. Donnelly (*Chair*), W.H. Money, J. Artz, S. Dasgupta

*Assistant Professors* R.A. Lumley, V. Sahasrabudhe, M.D. Haddad, Y. Zhou, W. Duan

See the School of Business programs of study leading to the Bachelor of Business Administration and the combined degree program leading to the Bachelor of Business Administration and Master of Science in Information Systems Technology.

**119 Introduction to Programming (3)**

Zhou

For students already familiar with basic computer concepts, who will learn a programming language, such as Visual Basic, useful for business applications.

Emphasis on computer applications in accounting and management information systems through hands-on programming. Prerequisite: BAdm 64. (Fall and spring)

**120 Structured Development with CASE (3)**

Sahasrabudhe

Analysis, design, and implementation of management information systems (MIS).

Structured methodologies and techniques for various stages of the MIS development

process. Computer-aided software engineering tools. May be taken for graduate credit with permission of program director and instructor. Prerequisite: ISTM 119 or permission of instructor. (Fall and spring)

**121 Database Design and Applications (3)** Granger

Theory, architecture, and implementation of database management systems in corporate and organization information systems. Fundamental concepts of database management and processing. Hands-on experience with database management packages. Prerequisite: ISTM 119 or permission of instructor. (Fall and spring)

**123 Business Data Communications (3)** Staff

A technical overview of data communication concepts that are useful in the design and management of local and wide area networks. Internet technologies and their business applications are emphasized. Prerequisite: BAdm 64. (Spring)

**190 Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

**199 Independent Study (3)** Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall, spring, and summer)

## **INTERIOR DESIGN**

*Associate Professor S. Travis (Director)*

*Assistant Professors E. Speck, N. Evans, C. Anderson, N. Volchansky*

*Bachelor of Fine Arts with a major in interior design*—The following requirements must be fulfilled:



1. The general requirements stated under Columbian College of Arts and Sciences.
2. 36 credit hours of fine arts and art history courses, consisting of FA 11–12, 21, 71 (as foundation courses, followed by a portfolio review); AH 31–32, 145, 161; and 12 credits selected from courses in ceramics, painting, photography, sculpture, new media, or advanced drawing (each course must be in a different area).
3. 39 credit hours of interior design courses consisting of IntD 101, 102, 103, 110, 111, 112, 113, 130, 131, 133, 135; and 6 credits of electives chosen from IntD 150 through 173. The program is available on a full-time basis only.

**Note:** A course fee is charged for all interior design courses except IntD 133 and 172.

**101 Foundations in Interior Design Theory (3)**

Application of basic design concepts and introduction to the design process.

Development of floor plans and elevations, furniture layouts, perspective drawings, and presentation boards. Prerequisite: IntD 102 or permission of instructor. (Fall)

**102 Architectural Drawing and Drafting (3)**

Basic graphic communication skills appropriate to the development of interior design projects. Two- and three-dimensional drawing skills developed through sketching, orthographic drawing, paraline drawing, and perspective techniques. Prerequisite: FA 11 or permission of instructor. (Fall and spring)

**103 Textiles and Finish Materials (3)**

Textiles and finish materials for commercial and residential interiors. Physical properties, application, testing, regulations, and specification. (Fall)

**110 Studio I: Residential (3)**

Residential interior design, both single-family and multi-unit. Application of residential building technology, code requirements, and barrier-free design. Custom millwork and cabinetry design. Prerequisite: IntD 101 and 103. (Spring)

**111 Studio II: Commercial (3)**

Commercial interior design: office, restaurant, and retail. Application of building codes and ADA requirements. Layout and specification of contract and systems furniture. Commercial textiles and finish materials. Prerequisite: IntD 110. (Fall)

**112 Studio III: Institutional (3)**

Application of theories of human behavior and design in large-scale institutional settings, including public and private facilities serving medical, educational, and extended-care needs. Prerequisite: IntD 111, 130, and 131. (Spring)

**113 Methods and Materials of Building Construction (3)**

Study of building systems as they relate to design and function of interior spaces: mechanical, electrical, HVAC systems. Environmental concerns: energy, daylighting, acoustics. Prerequisite: IntD 111. (Spring)

**130 Computer-Aided Drafting (3)**

Introduction to basic CAD commands, two- and three-dimensional drawings, enhancement, and plotting. Using CAD as a tool to extend the design process. Prerequisite: FA 71, IntD 102. (Fall and spring)

**131 Lighting Design (3)**

Study of basic terminology, concepts, and principles of lighting design. Study of light and energy, incandescent and gaseous discharge lamps, luminaries, task requirements,

measurement and calculation, human factors, and design applications. Prerequisite: IntD 110. (Fall)

**133 Internship (3)**

Application of knowledge and skills in project-based setting for a local firm.

Appropriate placement and sponsor participation required prior to registration. Topics include business procedure and practice, legal and ethical issues, and designer–client–contractor relations. Prerequisite: IntD 111 and permission of instructor. (Spring)

**135 Color Theory (3)**

Intensive exploration of the objective rationale and subjective experience of color in interiors through execution of problems in color contrast and color scales. (Spring)

**150 Studio in Historic Interiors (3)**

Exploration and interpretation of significant periods of interior design through the study of historic furniture, decorative arts, and architecture. Focus on application of historic styles for restoration or adaptive use. Prerequisite: AH 145, 161; IntD 101. (Fall)

**151 Furniture Design (3)**

Principles and components of furniture design, both functional and aesthetic. Emphasis on construction, design, detailing of cabinetry and millwork. Development of design and technical skills. Two- and three-dimensional drawing models. Prerequisite: IntD 101. (Fall)

**152 Presentation Techniques (3)**

Advanced three-dimensional drawing using rapid visualization techniques, sketching, and constructed drawings. Development of multimedia rendering techniques.

Prerequisite: IntD 101. (Spring)

**153 Advanced Computer-Aided Drafting (3)**

Application of advanced computer graphics using 3-D geometric modeling application programs to examine form and space in a practical in-depth exploration. Prerequisite:

IntD 130. (Spring)

**155 New Materials and Concepts (3)**

New materials and technologies that are being introduced in built interior environments. Focus on product development, adaptive design, and alternative design theories and methodologies. (Spring)

**170 Special Topics (3)**

A theoretical and practical in-depth exploration of a specific area of interior design.

Topic to be announced in the Schedule of Classes.

**171 Environmental Analysis (3)**

Study of interior design as it relates to the built environment and its effect on human behavior. Interior space as a stage for social interaction. Evaluation of interior spaces using standard research methodology. Prerequisite: IntD 101. (Spring)

**172 Individual Problems and Research (arr.)**

Independent research on selected topic. Research proposal must be approved by program advisor prior to registration. May be repeated for credit with permission.

**173 Contemporary Issues in Interior Design (3)**

The roles and responsibilities of interior designers in the context of current social and technical forces. Topics include specialty lighting, sustainability, integrated security, AV integration, product development. (Fall)

## **INTERNATIONAL AFFAIRS**

*University Professors* L.A. Etzioni, J.N. Rosenau, B. Wood

*Professors* H.L. Agnew, C.J. Allen, H.G. Askari, M.A. Atkin, W.H. Becker, E. Berkowitz, A.

Black (*Research*), B.L. Boulier, M.D. Bradley, J. Brinkerhoff, A. Brooks, M.E. Brown, N.J.

Brown, J. Chaves, J.J. Cordes, W.K. Cummings, H.J. Davis, C.J. Deering, B.J. Dickson,

R.M. Dunn, Jr., R. Eisen, R.M. Entman, H.B. Feigenbaum, J. Ferrer (*Research*), M.

Finnemore, L. Fuerth (*Research*), C. Glaser, E.W. Gnehm, J. Goldgeier, D. Gow, T. Griffith

(*Practice*), R. Grinker, S. Hamano, H. Hertzfeld (*Research*), P. Hotez, K.F. Inderfurth

(*Practice*), G. Kaminsky, D.K. Kennedy, R.E. Kennedy, Jr., Y.K. Kim-Renaud, P.F. Klarén,

J. Kuipers, S. Livingston, F. Maltzman, M. Marquardt, C. McClintock, B.D. Miller, M.O.

Moore, H.R. Nau, S. Pace (*Practice*), J. Pelzman, R. Phillips, J.M. Post, M. Price, S.

Rehman, B. Reich, W. Reich, L.P. Ribuffo, F. Robles, P. Rollberg, R.W. Rycroft, S. Sell, F.

Sesno, D. Shambaugh, S.C. Smith, M. Sodaro, R.H. Spector, R. Steinhardt, R. Thornton,

N.S. Vonortas, R. Weiner, S. Wolchik, H.L. Wolman, J. Yang, A.M. Yezer

*Associate Professors* S. Aday, S. Balla, N. Blyden, A. Bowie, Y. Captain, E. Chacko, M.

Cipriani, R.W. Click, H.J. Farrell, M. Gonglewski, D.A. Grier, H.E. Hale, H.M. Harrison, J.

Hershberg, D. Khoury, J.H. Lebovic, S. Lubkemann, M. Lynch, M. McAlister, E.A. McCord,

S. McHale, M.M. Mochizuki, K. Morgan, D.R. Rain, L.A. Riddle, S. Roberts (*Practice*), R.

Robin, R.M. Samaniego, J. Spear, J. Spencer, M.B. Stein, S. Suranovic, S. Waisman, P.D.

Williams, J.H. Williams, D. Yang, A. Zimmerman

*Assistant Professors* M. Atia, M. Ayyagari, J. Blomster, M.X. Chen, A.S. Dent, D.S. Eglitis, M.S. Emran, M. Esseesy, I. Feldman, A. Fostel, A. Friedman, L. Fujii, I.L. Hanami, L. Hughes, J.K. Jung, P. Kelly, G.M.S. Lambright, R. Lucea, C. Mylonas, C. Rector, S. Robinson, E. Saunders, H. Schmidt, D. Shaw, R.J. Shepherd, T. Sinclair, E.J. Teitelbaum, P.N. Zhang

See the Elliott School of International Affairs for Bachelor of Arts programs in international affairs, Asian studies, Latin American and hemispheric studies, and Middle East studies.

**5 Introduction to International Affairs: A Washington Perspective (4)** Staff

Open only to first-year students in the Elliott School. An introduction to the study of international affairs, while integrating material designed to orient students to the Elliott School, the University, and the city of Washington. Credit may not be earned for both IAff 5 and PSc 3. (Fall and spring)

**40 Basic Topics in International Affairs (3)** Staff

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Primarily for Elliott School freshmen and sophomores.

**90 Latin America: Problems and Promise (3)** Klarén, Price

An interdisciplinary course in Latin American studies designed to introduce undergraduates to the diverse, rich, and complex history, politics, economy, culture, and society of Latin America. (Fall)

**91 East Asia: Past and Present (3)** McCord, McHale, D. Yang

An interdisciplinary course offering a comprehensive and integrated introduction to the civilizations and present problems of East Asia. (Spring)

**92 Russia and Eastern Europe: An Introduction (3)** Staff

A multidisciplinary introduction to the lands and cultures of the former Soviet Union and Central and Eastern Europe. The main emphasis is on history and politics, with attention also given to economics, trade, geography, military matters, literature, and the media. (Fall)

**93 Africa: Problems and Prospects (3)** Staff

Aspects of the environment, culture, and politics as they affect the present and anticipated future of Africa. (Spring)

**94 Europe: International and Domestic Interactions (3)** Sodaro

A multidisciplinary view of contemporary Europe, including the E.U. states, other states of Eastern Europe, and Turkey. The widening processes of political, judicial, economic, cultural, and security integration. Prerequisite: IAff 5, PSc 1. (Spring)

**96 Islam: Culture and Society (3)** Staff

An introduction to Islam, as both a transnational religious tradition and a way of thinking about an important world civilization. From the 7th century C.E. to the era of modernity.

**171 U.S. Foreign Policy Summer Institute (3 or 4)** Staff

The institutions and ideas that shape U.S. foreign policy, including the U.S. Congress and administration, foreign embassies, international organizations, think tanks, interest groups, and media outlets. A separate section of the course covers issues of reporting on foreign policy issues. (Summer)

For IAff 179 to 190, topics are announced in the Schedule of Classes. The courses may be repeated for credit provided the topic differs. Prerequisite: IAff 5 or PSc 3; junior or senior standing.

|     |  |       |
|-----|--|-------|
| 179 | <b>Special Topics in Science and Technology Policy (3)</b>           | Staff |
| 180 | <b>Special Topics in Security Policy (3)</b>                         | Staff |
| 181 | <b>Special Topics in Conflict Resolution (3)</b>                     | Staff |
| 182 | <b>Special Topics in Foreign Policy (3)</b>                          | Staff |
| 183 | <b>Special Topics in Development Policy (3)</b>                      | Staff |
| 184 | <b>Special Topics in Trade and International Economic Policy (3)</b> | Staff |
| 185 | <b>Special Topics in European and Eurasian Studies (3)</b>           | Staff |
| 186 | <b>Special Topics in Asian Studies (3)</b>                           | Staff |
| 187 | <b>Special Topics in Latin American and Hemispheric Studies (3)</b>  | Staff |
| 188 | <b>Special Topics in Middle East Studies (3)</b>                     | Staff |
| 189 | <b>Special Topics in African Studies (3)</b>                         | Staff |
| 190 | <b>Special Topics in International Affairs (1 to 3)</b>              | Staff |
| 191 | <b>Senior Seminar (3)</b>  | Staff |

Intensive readings, discussion, research, and writing. Students must meet selection criteria and receive approval from the Elliott School Office of Academic Advising and Student Services.

|     |                            |       |
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| 195 | <b>Internship (0 to 3)</b> | Staff |
|-----|----------------------------|-------|

Internships in public, private, and nonprofit organizations concerned with international affairs. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for up to 6 credits with permission.

|     |  |       |
|-----|--|-------|
| 198 | <b>Independent Study and Research (1 to 3)</b> | Staff |
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For juniors and seniors with a minimum grade-point average of 3.0. Students must find a sponsoring faculty member and receive approval from the Elliott School Office of Academic Advising and Student Services. May be repeated for credit with permission of the dean.

**199 Senior Thesis (3)**

Staff

For Elliott School seniors only. Students must meet selection criteria, find a sponsoring faculty member, and receive approval from the Elliott School Office of Academic Advising and Student Services.

**INTERNATIONAL BUSINESS**

*Professors* Y.S. Park, H.G. Askari, F. Robles (*Chair*), R. Weiner, J. Yang, S.S. Rehman

*Associate Professors* R.W. Click, J. Ferrer (*Research*), J.W. Spencer, J. Forrer (*Research*), L.A.

Riddle, A. Phene

*Assistant Professors* P. Dastidar, M. Ayyagari, R. Lucea, S. Jandhyala, H. Bogaard, W. Chen

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

**160 Introduction to International Business (3)**

Spencer, Riddle, Ayyagari,

Lucea, Jandhyala

The international business environment, including social, cultural, political, technological, and institutional domains. Multinational corporation strategic imperatives and organizational challenges, including financial, marketing, human resources, and other aspects of management. Prerequisite: Econ 11–12; prerequisite or corequisite: BAdm 59 or 145 or Econ 181 or 182. (Fall and spring)

**164 Managing the Multinational Enterprise (3)**

Spencer, Phene

The changing nature of the international environment and the resulting effects on strategy of U.S. and foreign multinational corporations. Prerequisite: IBus 160.

**166 International Marketing Management (3)** Robles, Riddle

Introduction to international marketing analysis and strategy, and the dynamic nature of international markets. Analysis of different types of international markets and formulation of initial entry strategies. Prerequisite: BAdm 110; BAdm 59 or 145 or Econ 181 or 182. (Fall and spring)

**167 Regional Strategy for Multinationals (3)** Robles

Regional marketing/business strategies that respond to opportunities and challenges in different world regions. Effects of cultural, economic, political, and social environments.

**168 Foreign Market Analysis (3)** Robles

Project course involving global market research for target market selection, market entry strategy and in-country marketing plan development and financial implications of recommended global marketing strategy. Focus on consulting process as ancillary component. Prerequisite: IBus 160, 166.

**171 International Business Finance (3)** Rehman, Yang, Click, Ayyagari, Chen

Analysis of the international economic environment and its influence on corporate financial management of international operations. Prerequisite: BAdm 115; BAdm 59 or 145 or Econ 181 or 182. (Fall and spring)

**173 International Banking (3)** Park

Theory and practice of international banking; analysis of international commercial and investment banking from a management perspective; subjects include current

international monetary and financial environment, money and capital markets, and topical problems of international banking from a management perspective.

Prerequisite: IBus 171.

**175 International Monetary and Financial Issues (3)** Askari, Rehman, Yang

International macro and micro issues of money and finance examined from a management perspective. Globalization, international monetary systems, LDC debt crises, corporate governance and valuation, and the role of the IMF and the World Bank. Prerequisite: IBus 171 or permission of instructor.

**190 Special Topics (3)** Staff

Experimental offering; new course topics and teaching methods.

**199 Independent Study (arr.)**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

**ITALIAN**

See **Romance, German, and Slavic Languages and Literatures.**

**JAPANESE**

See **East Asian Languages and Literatures.**

**JOURNALISM AND MASS COMMUNICATION**

See **Media and Public Affairs.**

**JUDAIC STUDIES**

**Committee on Judaic Studies**

R. Eisen (*Director*), S. Ben-Gad, N. Brown, E. Cline, J. Cohen, P. Duff, E. Friedland, B. Hill, L. Jacobson, F. Moskowitz, Y. Peleg, B. Reich, W. Reich, D. Schwartz, L. Strauss, M. Ticktin, S. Waisman

Columbian College of Arts and Sciences offers an interdisciplinary program in Judaic studies leading to the degree of Bachelor of Arts. This program is intended for students who wish to investigate the history, language, literature, religious and philosophical thought, and political and social experience of the Jewish people from the perspective of several academic disciplines. (Students who wish to concentrate on the religious aspects of Judaism and its relationship to the other religious traditions of the world may prefer to elect a major in religion with an emphasis on Judaism [see Religion].) Students who have studied abroad should verify the residence requirements of Columbian College of Arts and Sciences.

*Bachelor of Arts with a major in Judaic studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses for the major (43 credit hours):

(a) Hebr 1–2, 3–4; Hist 158 and another 100-level course in Jewish history; Rel 9 or Hist 108; Rel 106 or 107; PSc 176 or 179.

(b) Two courses in literature; may be in Hebrew, including Hebr 103, 104, 120–21, or in translation, including Clas 100, 101.

(c) Two additional courses pertaining to Judaic studies selected from lists available at [www.gwu.edu/~judaic](http://www.gwu.edu/~judaic); substitutions are permitted with the approval of an advisor designated by the Committee on Judaic Studies.

*Minor in Judaic studies*—Required: Hebr 1–2 and a minimum of 12 credit hours, chosen in consultation with an advisor designated by the Committee on Judaic Studies, from the courses listed at [www.gwu.edu/~judaic](http://www.gwu.edu/~judaic). (Of the 12 credit hours, at least 6 must be taken at GW and at least 6 must be in courses other than Hebrew language study.)

## **KOREAN**

See **East Asian Languages and Literatures**.

## **LATIN**

See **Classical and Near Eastern Languages and Civilizations**.

## **LINGUISTICS**

### **Committee on Linguistics**

S. Hamano, Y.-K. Kim-Renaud, J. Kuipers, R.M. Robin

Columbian College of Arts and Sciences offers an interdepartmental program in linguistics. The purpose of the program is to provide a systematic treatment of the central issues in linguistics through courses taught under the auspices of the program and through other departments in Columbian College.

*Minor in linguistics*—15 credit hours of courses in linguistics, including Ling 101 and four courses from the following groups. Psycholinguistics—Ling 102. Applied Linguistics—Chin 123–24; SpHr 130, 131. Biological Foundations of Language—SpHr 105, 106. Sociolinguistics—Anth 161, 162; Phil 214 (with permission of instructor). Academic advising about the minor in linguistics is available from any member of the Committee on Linguistics.

### **101 Language and Linguistic Analysis (3)**

Staff

Development of a fundamental understanding of the nature of language and its components, including phonology, morphology, syntax, semantics, and pragmatics.

Discussion of major approaches, principles, and concerns in the field of linguistics.

Same as Anth 168. (Spring)

**102 Psycholinguistics (3)**

Staff

Language as species-specific property of the human mind. Psychological processes involved in the encoding and decoding of language; first and second language acquisition and bilingualism. Same as Anth 163. (Spring)

**MANAGEMENT**

*Professors* S.A. Umpleby, E.K. Winslow, J. Bailey (*Chair*), P.M. Swiercz

*Associate Professors* P. McHugh, G.T. Solomon, D.C. Kayes

*Assistant Professors* T.M. Nielsen, J.M. Jensen, J.C. Messersmith, S.N. Hill

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

**110 Applied Human Resource Management (3)**

McHugh, Swiercz

The labor force and labor markets. The legal environment of human resource management. Human resource planning; employee recruiting, selection, training, development, compensation, motivation, discipline, health and safety. Prerequisite: BAdm 130.

**115 Leadership (3)**

Bailey, Swiercz

Leadership in organizations and in society. Consideration of whether leadership is a personal trait or a structured behavior and whether it is universal across domains or situation specific. Modern and historical examples; issues of leadership in popular contexts. Prerequisite: BAdm 130. (Fall)

**116 Contemporary Topics in HRM (3)**

McHugh, Swiercz

Contemporary practice in human resource planning, recruitment and selection, training and development, performance management, compensation and benefits, employee relations, and international human resource management. Interaction with practitioners through actual situations, case analyses, and presentations. Prerequisite: BAdm 130.

(Spring)

**117 Employee Relations and Negotiations (3)**

McHugh, Swiercz

The rights of employees and employers with reference to employee influence in the workplace; the impact of unions on human resource practices. Negotiation and conflict resolution skills for bargaining, grievance, mediation, and arbitration situations; case analyses. Prerequisite: BAdm 130 or consent of instructor. (Fall)

**190 Special Topics (3)**

Staff

Experimental offering; new course topics and teaching methods. May be repeated once for credit.

**191 Women's Entrepreneurial Leadership (3)**

Staff

Development of the knowledge and skills needed to create a venture, which may include a social project, an arts initiative, or a new business.

**192 Small-Business Management (3)**

Solomon and Staff

Theory and practice of small business management. Focus on effective management, essentials of planning and organizing, and financial and administrative controls.

Alternative business forms; purchase of ongoing firms; franchising; new business start-ups. (Fall and spring)

**194 Product Development and Venturing (3)**

Solomon

Students form entrepreneur teams to develop new products. Prerequisite: Mgt 192 or permission of instructor. (Spring)

**195 Management of the Growing Entrepreneurial Venture (3)** Staff

Examination of the data, dilemmas, and decisions that can confront leaders of post-startup entrepreneurial ventures.

**199 Independent Study (3)** Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall, spring, and summer)

**MARKETING**

*Professors* R.F. Dyer, P.A. Rau, R.S. Achrol, L.M. Maddox, S.S. Hassan (*Chair*)

*Associate Professors* M.L. Liebrez-Himes, V. Perry

*Assistant Professors* A.V. Krasnikov, K.R. Schueler

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

**Departmental prerequisite:** BAdm 110 is prerequisite to all courses in the Marketing Department; additional prerequisites are listed with the courses.

**142 Consumer Behavior (3)** Perry and Staff

Social, cultural, and psychological factors influencing the behavior of consumers. Models of buyer behavior, consumption patterns, market segmentation, attitude formation and change, brand loyalty, adoption of innovations, and store choice decisions. Marketing management and public policy implications of consumer research. (Fall and spring)

**143 Marketing Research (3)** Rau and Staff



Basic methods and techniques of market research. Designing a marketing research project: research questions, secondary and syndicated data, primary data collection approaches, data analysis and report presentation. Focus group interviews, questionnaire construction, statistical software packages. Prerequisite: Stat 112 or 118. (Fall and spring)

148 **Advertising** (3) Maddox

Planning an advertising campaign. Consumer and market information, message appeals, media selection and scheduling, measuring effectiveness. Current criticism and regulation of the advertising function. Other major marketing communication tools, including personal selling and sales promotion. Prerequisite: Mktg 142, 143. (Fall)

149 **Advanced Advertising Campaigns** (3) Maddox

Participation in the National Student Advertising Competition. Research, media planning, copywriting, layout/design. Travel to competition site. Prerequisite: Mktg 148 and permission of instructor; corequisite: Mktg 199. (Spring)

150 **Salesmanship and Sales Management** (3) Schueler

Development of personal selling and presentation skills; examination of types of selling situations. Organization of sales department, sales planning and forecasting, quotas, territories, performance standards, and analysis and control of distribution costs. Prerequisite: Mktg 142, 143. (Fall and spring)

152 **Retailing Management** (3) Staff

A study of retailing management and strategy covering the current environment of retailing, retail market and financial analysis, store location and design, inventory

management, and non-store and service retailing. Industry executive and student presentations and case analyses. (Fall)

**159 Marketing: Strategic Planning (3)**

Dyer, Achrol, Liebrecht-Himes, Rau

The capstone course for marketing majors. Analytical integration of material covered in previous marketing courses. Marketing strategy literature, financial dimensions of marketing decisions, and comprehensive cases. Prerequisite: Mktg 148 or 150.

(Fall and spring)

**190 Special Topics (3)**

Staff

Experimental offering: new course topics and teaching methods.

**199 Independent Study (arr.)**

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

**MATHEMATICS**

*Professors* H.D. Junghenn, M.M. Gupta, E.A. Robinson, F.E. Baginski, D.H. Ullman, J.

Przytycki, J. Bonin, V. Harizanov, Y. Rong, J.B. Conway (*Chair*)

*Associate Professors* M. Moses, W. Schmitt, L. Abrams, X. Ren

*Assistant Professors* A. Shumakovitch, H. Wu, M. Musielak

*Bachelor of Arts or Bachelor of Science with a major in mathematics*—The department offers the Bachelor of Arts and Bachelor of Science with a major in mathematics through three tracks: pure mathematics, applied mathematics, and computational mathematics. Each track is designed to give students a broad background in the theory and practice of modern mathematics. The pure mathematics and applied mathematics tracks are complementary and equally rigorous, differing mainly in their emphasis. The Bachelor of Science in either track provides strong

preparation for graduate study in mathematics. The Bachelor of Arts, while providing a strong mathematics background, is designed to permit a wider selection of electives to enable students to plan for careers such as teaching, medicine, or law. The computational mathematics track is designed to prepare students for careers in government and industrial settings in which modeling and computation play a large role; it is intended for students who plan to enter the job market immediately after graduation.

The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Math 21 or 31 and Math 32, 33, 71, 72, and 84.
3. Required courses for the major—

(a) The track in pure mathematics: Math 121, 139, 140, and Math 122 or 125; 9 credits of additional 100-level math courses for the B.A. or 15 credits of additional 100-level math courses for the B.S.

(b) The track in applied mathematics: Math 139, 142, 143, 153, and 159; 6 credits of additional 100-level math courses for the B.A. or 12 credits of additional 100-level math courses for the B.S.

(c) The track in computational mathematics: Math 142, 143, 153, 159, and one course selected from Stat 157 or CSci 49, 50, 100, or 102; 6 credits of additional 100-level math courses for the B.A. or 12 credits of additional 100-level math courses for the B.S.

*Special Honors*—To graduate with Special Honors, a student must meet the general requirements stated under University Regulations; maintain a grade-point average of at least 3.5 in courses in the major; enroll in 3 credit hours of Math 195 in addition to the other required courses in the major; and present an oral defense of a senior thesis prepared for Math 195.

*Minor in mathematics*—18 credits in mathematics courses, including Math 84, and of which at least 9 are at the 100 level or higher, chosen in consultation with a departmental advisor.

In addition to the degree programs listed here, a post-baccalaureate certificate in mathematics is offered.

With permission, graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Note:** Math 20 and 21 each cover one-half the material of Math 31. Because Math 21, 31, and 52 are related in their subject matter, credit for only one of the three may be applied toward a degree. For courses that indicate the placement examination as prerequisite, see <https://my.gwu.edu/mod/placement/>.

**7 Mathematics and Politics (3)**

Staff

A mathematical treatment of fair representation, voting systems, power, and conflict. The impossibility theorems of Balinsky and Young and of Arrow. The electoral college. The prisoner's dilemma.

**8 History of Mathematics (3)**

Gupta

The history of mathematics, with emphasis on its importance in the evolution of human thought. Students learn some useful mathematics from areas such as geometry, number theory, and probability and develop an appreciation of the mathematical endeavor.

**9–10 Mathematical Ideas I–II (3–3)**

Staff

Math 9: Elementary mathematical models of growth and decay, scaling, chaos, and fractals. Math 10: Elementary graph theory, scheduling, probability theory.

**20–21 Calculus with Precalculus I–II (3–3)**

Staff

An introduction to single-variable calculus (differentiation and integration of algebraic and trigonometric functions with applications), with the concepts and techniques of precalculus developed as needed. Prerequisite to Math 20: the placement examination or a score of 560 or above on the SAT II in mathematics; Math 20 is prerequisite to Math 21.

**31 Single-Variable Calculus I (3)** Staff

Limits and continuity. Differentiation and integration of algebraic and trigonometric functions with applications. Prerequisite: the placement examination or a score of 720 or above on the SAT II in mathematics.

**32 Single-Variable Calculus II (3)** Staff

The calculus of exponential and logarithmic functions. L'Hopital's rule. Techniques of integration. Infinite series and Taylor series. Polar coordinates. Prerequisite: Math 21 or 31.

**33 Multivariable Calculus (3)** Staff

Partial derivatives and multiple integrals. Vector-valued functions. Topics in vector calculus, including line and surface integrals and the theorems of Gauss, Green, and Stokes. Prerequisite: Math 32.

**51 Finite Mathematics for the Social and Management Sciences (3)** Staff

Systems of linear equations, matrix algebra, linear programming, probability theory, and mathematics of finance. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

**52 Calculus for the Social and Management Sciences (3)** Staff

Differential and integral calculus of functions of one variable; applications to business and economics. Prerequisite: the placement examination or a score of 560 or above on the SAT II in mathematics.

**71 Introduction to Mathematical Reasoning (2)** Moses and Staff

An introduction to the fundamental abstract concepts of modern mathematics as well as various proof techniques demonstrated on numerous examples taken from within discrete and continuous mathematics. Prerequisite: Math 32. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

**72 Introduction to Computing in Mathematics (2)** Staff

An introduction to the use of computers in modern mathematics and a primer in basic programming skills covering Maple, Matlab, and LaTeX. Prerequisite: Math 21 or 31. Open to majors and to others with permission of instructor or the departmental undergraduate advisor.

**84 Linear Algebra I (3)** Staff

Linear equations, matrices, inverses, and determinants. Vector spaces, rank, eigenvalues, and diagonalization. Applications to geometry and ordinary differential equations. Prerequisite: Math 21 or 31, or 51 and 52, or permission of instructor.

**91 Introductory Special Topics (1 to 3)** Staff

Admission by permission of instructor. May be repeated for credit.

**101 Introduction to Mathematical Logic (3)** Moses

Symbolic logic as a precise formalization of deductive thought. Logical correctness of reasoning. Formal languages, interpretations, and truth. Propositional logic and first-

order quantifier logic suited to deductions encountered in mathematics. Goedel's completeness theorem; compactness. Prerequisite: Math 71 or permission of instructor.

**102 Axiomatic Set Theory (3)**

Harizanov, Moses

Cantor's theory of sets. Russell's paradox. Axiomatization of set theory as a framework for a contradiction-free mathematics. The Zermelo–Fraenkel axioms and the axiom of choice. Finite, countable, and uncountable sets; ordinal and cardinal arithmetic. The continuum hypothesis. Prerequisite: Math 71 or permission of instructor.

**103 Computability Theory (3)**

Harizanov, Moses

The unlimited register machine as a model of an idealized computer. Computable and partial computable functions; Church–Turing thesis. Kleene's recursion theorem. Algorithmic enumerability. Unsolvability of the halting problem and other theoretical limitations on what computers can do. Discussion of Goedel's incompleteness theorem. Prerequisite: Math 71 or permission of instructor.

**104 Computational Complexity (3)**

Harizanov

Automata and languages. Deterministic and nondeterministic Turing machines. Space and time complexity measures and classes. The P versus NP problem. The traveling salesman problem and other NP-complete problems. Intractability. Circuit complexity. Introduction to probabilistic and quantum algorithms. Prerequisite: Math 71 or permission of instructor.

**106 Introduction to Topology (3)**

Przytycki, Rong

Metric spaces: completeness, compactness, continuity. Topological spaces: continuity, bases, subbases, separation axioms, compactness, local compactness, connectedness, product and quotient spaces. Prerequisite: Math 71 or permission of instructor.

**113 Introduction to Combinatorics (3)** Bonin

Introduction to combinatorial enumeration. Basic counting techniques, inclusion–exclusion principle, recurrence relations, generating functions, pigeonhole principle, bijective correspondences. Prerequisite: Math 71 or permission of instructor.

**120 Elementary Number Theory (3)** Bonin

Divisibility of integers, prime numbers, greatest common divisor, the Euclidean algorithm, congruence, the Chinese remainder theorem, number theoretic functions, Möbius inversion, Euler’s phi function, and applications to cryptography and primality testing. Prerequisite: Math 71 or permission of instructor.

**121 Introduction to Abstract Algebra I (3)** Abrams, Schmitt

Study of groups and associated concepts, including Lagrange’s theorem, Cayley’s theorem, the fundamental theorem of homomorphisms, and applications to counting. Prerequisite: Math 71 and 84 or permission of instructor.

**122 Introduction to Abstract Algebra II (3)** Abrams

Study of rings, through maximal and prime ideals, and the study of fields, through Galois theory. Prerequisite: Math 121 or permission of instructor.

**125 Linear Algebra II (3)** Staff

Theory of vector spaces, linear transformations, and matrices. Quadratic and bilinear forms. Characteristic polynomials and the Cayley–Hamilton theorem. Similarity and Jordan canonical form. Prerequisite: Math 71 and 84 or permission of instructor.



**132 Introduction to Graph Theory (3)**

Ullman

Fundamental concepts, techniques, and results of graph theory. Topics include trees, connectivity, traversability, matchings, coverings, colorability, planarity, networks, and Polya enumeration. Prerequisite: Math 71 or permission of instructor.

**139 Real Analysis I (3)**

Junghenn

A rigorous study of differentiation, integration, and convergence. Topics include sequences and series, continuity and differentiability of real-valued functions of a real variable, the Riemann integral, sequences of functions, and power series. Prerequisite: Math 32 and 71 or 84 or permission of instructor.

**140 Real Analysis II (3)**

Ullman

Continuation of Math 139. Topics include: topology of  $\mathbb{R}^n$ , derivatives of functions of several variables, inverse and implicit function theorems, multiple integrals, generalized Stokes's theorem. Prerequisite: Math 33, 84, and 139 or permission of instructor.

**142 Ordinary Differential Equations (3)**

Musielak, Ren

A first course in ordinary differential equations with an emphasis on mathematical modeling: solution curves, direction fields, existence and uniqueness, approximate solutions, first and second order linear equations, linear systems, phase portraits, and Laplace transforms. Prerequisite: Math 32 and 84 or permission of instructor.

**143 Partial Differential Equations (3)**

Baginski

A first course in partial differential equations: Fourier series and separation of variables, vibrations of a string, Sturm–Liouville problems, series solutions, Bessel's

equation, linear partial differential equations, wave and heat equations, separation of variables. Prerequisite: Math 33 and 84 or permission of instructor.

**148 Differential Geometry (3)**

Robinson

Curves in space, regular surfaces, tensors, fundamental forms of a surface. Gauss–Bonnet theory, minimal surfaces. The geometry of the Gauss map. Prerequisite: Math 33, 71, and 84 or permission of instructor.

**153 Introduction to Numerical Analysis (3)**

Gupta

Accuracy and precision. Linear systems and matrices. Direct and iterative methods for solution of linear equations. Sparse matrices. Solution of nonlinear equations.

Interpolation and approximate representation of functions, splines. Prerequisite: Math 33 or permission of instructor. Math 72 and 84 are recommended.

**157 Introduction to Complex Variables (3)**

Conway

Analytic functions and power series. Contour integration and the calculus of residues. Conformal mapping. Physical applications. Prerequisite: Math 33, 71, and 84 or permission of instructor.

**159 Introduction to Mathematical Modeling (3)**

Musielak

An introduction to the fundamental modeling ideas of dimensional analysis, scaling, and elementary approximations of curves and functions. Applications to development of models from science and engineering. Prerequisite: Math 72 and 142.

**161 Mathematics of Finance (3)**

Junghenn

A mathematical development and analysis of realistic models for financial option pricing. Mathematical underpinnings and financial concepts will be developed in parallel. Prerequisite: Math 33.

**181 Seminar: Topics in Mathematics (3)**

Staff

Past topics have included computational mathematics, fractals; network flows and combinatorial optimization; information theory and coding theory; dynamical systems; queuing theory. May be repeated for credit with permission. Prerequisite: Math 33 and 84 or permission of instructor.

**191 Special Topics (arr.)**

Admission by permission of instructor. May be repeated for credit.

**195 Reading and Research (arr.)**

Under the personal direction of an instructor. Limited to majors with demonstrated capability. Prior approval of instructor required. May be repeated for credit.

**MECHANICAL AND AEROSPACE ENGINEERING**

*Professors* R.E. Kaufman, C.A. Garriss, J.D.-Y. Lee, Y.-L. Shen, A.D. Cutler, S.M. Hsu, D.S.

Dolling, M.W. Plesniak (*Chair*)

*Associate Professor* R.R. Vallance

*Assistant Professors* M. Keidar, P. Ben-Tzvi, Y. Leng

*Adjunct Professor* M.A. Imam

*Professorial Lecturers* B.W. Hannah, P. Matic, B. Whang, G.C. Everstine, R.C. Blanchard, S.S.

Dodbele, A. Rao, M.K. King, E. McCafferty, A. Auslander, J.K. Soldner, J.H. Milgram, J.M.

Fleming, D.R. Gerk, T.M. Krafchak, R. Krishnamurthy, M.A. Busby, G. Bae

See the School of Engineering and Applied Science for the programs of study leading to the Bachelor of Science with a major in mechanical engineering.

**1–2 Introduction to Mechanical and Aerospace Engineering (1–1)**

Staff

Careers in mechanical and aerospace engineering and the necessary academic program. Teamworking and problem-solving skills for solution of design problems. Analytical and design problems and correlations between academic skills and the mechanical and aerospace engineering professions. Basic aspects of engineering ethics. (Academic year)

**4 Engineering Drawing and Computer Graphics (3)** Shen

Introduction to technical drawing, including use of instruments, lettering, geometric construction, sketching, orthographic projection, section and auxiliary views, dimensioning, pictorial drawing, and intersections and developments. Introduction to computer graphics, including topics covered in manual drawing, and computer-aided drafting. (Fall and spring)

**117 Engineering Computations (3)** Staff

Numerical methods for engineering applications. Methods for solving systems of linear equations, root finding, curve fitting, and data approximation. Numerical differentiation and integration and numerical solution of differential equations. Computer applications. Prerequisite: CSci 49 or 50. (Spring)

**120 Methods of Engineering Experimentation (2)** Staff

Acquisition and analysis of experimental data. Laws of modeling and simulation. Report formulation and presentation. Basic principles of measuring instruments and sensors. Fundamentals of digital data acquisition and use of computer-based data systems. Strain gages, oscilloscopes, transducers, and computerized data systems. Prerequisite: MAE 117. (Spring)

**126 Fluid Mechanics (3)** Plesniak and Staff

Fluid properties, fluid statics, integral and differential formulations of conservation of mass, momentum, and energy. Bernoulli's equation. Dimensional analysis and similitude. Inviscid flow. Viscous flow. Experimental and computational methods in fluid mechanics. Prerequisite: ApSc 58. (Fall)

**128 Biomechanics I (3)** Staff

Mechanical analysis of biological systems. Characterization of living tissue. Applications of statics, solid mechanics, kinematics, and elementary dynamics to the human musculoskeletal system. May be taken for graduate credit with approval of department. Prerequisite: ApSc 57, CE 120. (Spring)

**129 Biomechanics II (3)** Staff

Mechanical analysis of physiological fluid dynamics. Application of fluid flow analysis techniques to cardiovascular, pulmonary, respiratory, and phonatory flows. Introduction to biomedical devices that manipulate physiological flows. May be taken for graduate credit with approval of department. Prerequisite: MAE 128. (Spring)

**131 Thermodynamics (3)** Staff

Fundamentals of equilibrium thermodynamics; Zeroth, First, and Second Laws. Work, heat, internal energy, enthalpy, thermodynamic potential functions; heat transfer mechanisms, phase diagrams, equations of state and property tables, power systems, refrigeration, heat pump systems. Reversible and irreversible processes, Carnot cycle, entropy, exergy. Prerequisite: Phys 21. (Spring)

**134 Introduction to Vibration Analysis (3)** Lee, Ben-Tzvi

Natural frequencies, free vibration, forced vibration. Unbalance, whirling, vibration isolation. Measuring techniques and application of computers in vibration analysis.

Multiple degrees of freedom. Dynamic vibration absorbers. Shock and transient vibration. Prerequisite: ApSc 58. (Spring)

**145 Orbital Mechanics and Spacecraft Dynamics (3)** Staff

Coordinate systems and transformations, rocket equation, two-body problem, orbit transfers, orbit perturbations, attitude dynamics and stability of symmetric spacecraft, environmental and control torques. (Fall)

**149 Thermal Systems Design (3)** Staff

Completion of a thermal systems design project that requires integration of engineering science, economics, reliability, safety, ethics, professional responsibility, and social considerations. Development and use of design methodology, optimization, feasibility considerations, detailed system descriptions, and presentation of results. Prerequisite: MAE 187. (Fall)

**152 Mechanical Engineering Laboratory (2)** Garriss and Staff

Project-oriented course. Simulates working environment of professional engineers. Projects are assigned in student's areas of interest; student is expected to design and assemble own experiments. Extensive use of instrumentation and computing facilities. Project proposal, progress reports, final report, and periodic oral presentations required. Prerequisite: MAE 120. (Spring)

**155 Aerodynamics (3)** Garriss

Subsonic and supersonic aerodynamics: potential flow, lift and form drag, viscous effects, compressible flow. Prerequisite: MAE 126. (Spring)

**157 Aerodynamics Laboratory (1)** Staff

Subsonic and supersonic wind tunnel experiments and simulations. (Fall)

**162 Aerospace Structures (3)** Staff

Basic structural theory of lightweight aerospace structures. Development of shear and bending moment diagrams and stresses. Analysis of typical monocoque structures. External airloads and their distribution. Mechanical properties of metal and advanced composite structures. Design of members in tension, bending or torsion, and design of webs in shear. (Spring)

**163 Airplane Performance (3)** Staff

Lift and drag estimation methods. Airplane performance measures, such as range and endurance, turning flight, specific excess power and acceleration, takeoff and landing performance. Longitudinal and lateral-direction static and dynamic stability. Control surface effectiveness. (Fall)

**166 Materials Engineering (2)** Vallance

Mechanical properties, plastic deformation dislocation theory, yielding, strengthening mechanisms, microstructure and properties, heat treatment of steel, composites, amorphous materials, viscoelastic deformation, creep, fracture, fatigue, fatigue crack propagation. Prerequisite or concurrent registration: ApSc 130. (Fall)

**167 Mechanics of Materials Laboratory (1)** Vallance

Measurement of strains and study of failure resulting from applied forces in ductile, brittle, anisotropic, elastomeric, plastic, and composite materials. Study of tension, compression, bending, impact, and shear failures. Prerequisite or concurrent registration: MAE 166. (Fall)

**168 Introduction to Biomaterials (3)** Staff

Fundamentals of materials science and engineering applied to artificial materials in the human body. Topics include biocompatibility, techniques to minimize corrosion or other degradation of implant materials, and the use of artificial materials in various tissues and organs. Prerequisite: Approval of department. Course not open to MAE students. (Fall)

**170 History and Impact of the U.S. Patent System (3)** Garris

Economic systems and emergence of the free market; role of the patent system in the industrial development of the United States; constitutional foundations; evolution of the U.S. patent system; landmark litigation; impact on future innovation; international aspects; the likely future of the patent system. (Spring)

**171 Patent Law for Engineers (3)** Staff

Types of patents; international patents; inventorship; prosecution process; basic references for patents; detailed structure of a patent; patentability requirements; reexamination and reissue; litigation; infringement and invalidity; copyrights, trademarks, and trade dress. May be taken for graduate credit with approval of department. (Fall)

**172 Engineering Design and the Patent System (3)** Staff

Design experience in group projects involving following precisely the teachings of a licensed patent; or avoiding infringement of a provided patent while offering a competitive alternative; or evaluating a provided patent in light of prior art or by attempting to design a competitive product. May be taken for graduate credit with approval of department. Prerequisite: MAE 171 and senior status. (Fall)

**182 Electromechanical Control System Design (3)** Lee, Ben-Tzvi



Application of control theory to the design of electromechanical systems. Transducers, valves, and other control components. Mathematical models of open- and closed-loop electromechanical systems. Root locus and frequency response methods; application to the synthesis of feedback systems by both manual and computer-aided techniques.

Prerequisite: MAE 117, 134. (Fall)

**187 Heat Transfer (3)**

Keidar and Staff

Steady- and unsteady-state heat conduction problems. Analytical and numerical solution methods. Convective heat transfer, boundary-layer approach, analogy between heat and momentum transfer. Thermal radiation; fundamental concepts and laws. Heat-exchanger design. Prerequisite: MAE 126, 131. (Spring)

**190 Analysis and Synthesis of Mechanisms (3)**

Kaufman and Staff

Kinematics and dynamics of mechanisms. Displacements, velocities, and accelerations in linkage, cam, and gear systems by analytical, graphical, and computer methods. Synthesis of linkages to meet prescribed performance requirements. Prerequisite: ApSc 58. (Fall)

**191 Mechanical Design (3)**

Kaufman and Staff

Integration of knowledge of strength of materials in a design context. Stresses and deflections in engineering structures. Theories of failure. Introduction to the design of mechanical components, such as fasteners, shafts, springs. Introduction to the use of computers in mechanical engineering design. Prerequisite: CE 120, MAE 117. (Spring)

**192 Manufacturing Processes and Systems (3)**

Shen and Staff

Introduction to manufacturing techniques for metals, polymers, ceramics, and composites. Relationships between properties of materials and techniques for processing them. Process selection, design, control, and integration. Computer-integrated manufacturing, robotics and assembly automation. Prerequisite: junior status or permission of instructor. (Fall)

**193 Engineering Systems Design (3)** Kaufman and Staff

Creative engineering design, problem definition, and concept generation. Design of journal and roller element bearings, fasteners and permanent joints, and springs.

Design project incorporating design selection, and optimization. Project presentation using graphical and computer resources. Prerequisite: MAE 191. (Fall)

**194 Mechatronics Design (3)** Ben-Tzvi

Data acquisition and digital signal processing. Sensors and their characteristics—displacement, position/velocity, force/pressure, piezoelectric. Actuators—mechanical, electrical, pneumatic, hydraulic. Modeling and simulation of dynamic systems.

Mechanism design. Digital control systems. Microprocessors, digital logic/circuits, motor drives. Lab experiments. Prerequisite: MAE 182. (Spring)

**195 Computer-Aided Engineering of Mechanical Systems (3)** Staff

Presentation of the major elements of computer-aided engineering systems: interactive computer graphics, finite element analysis, and design optimization. Consideration of economics, safety, and reliability factors. Prerequisite: MAE 193; concurrent registration: MAE 196. (Spring)

**196 Computer-Aided Engineering Laboratory (1)** Staff

Instruction and hands-on applications of computer-aided engineering systems to the design, analysis, and optimization of mechanical engineering components and systems.

Concurrent registration: MAE 195. (Spring)

**197 Robotic Systems Design and Applications (3)** Ben-Tzvi and Staff

Modeling and analysis of robot designs. Kinematics, statics, and dynamics of linkages.

Design and selection of mechanical structures, actuators, transmissions, and sensors.

Design of robotic control systems. Relevant computer hardware and software.

Industrial applications and limitations of robot systems. Lab experiments. Same as

ECE 192. Prerequisite: MAE 182. (Spring)

**198 Research (1 to 3)** Staff

Applied research and experimentation projects, as arranged. Prerequisite: junior or

senior status. (Fall and spring)

**199 Student Design Project (1 to 3)** Staff

Special student projects involving extensive design of various mechanical engineering systems. Examples include the solar car, mini-Baja, or other design competitions that typically are national in scope. May be taken for graduate credit by graduate students. (As arranged)

**MEDIA AND PUBLIC AFFAIRS**

*Professors* C.H. Sterling, J.B. Manheim, S.V. Roberts, R.M. Entman, L. Huebner, F. Sesno

(*Director*), S.L. Livingston, M.G. Freedman

*Associate Professors* J.E. Steele, L.S. Harvey, A.L. May III, M. Feldstein, P.F. Phalen, S. Aday,

R. Russell, K.A. Gross, S. Waisbord

*Assistant Professors* S. Keller, N. Seavey (*Research*), J.M. Shanahan, J. Osder, C.S. Bailard

The School of Media and Public Affairs, part of Columbian College of Arts and Sciences, offers programs of study leading to the Bachelor of Arts with majors in journalism and mass communication and in political communication. Entering freshmen may be admitted to majors within SMPA through a competitive application process as specified in application materials distributed by the Office of Admissions.

In addition, a limited number of students will be admitted through a competitive application process that begins after the student is accepted to the University. Students are encouraged to apply during the first semester of their sophomore year; applications are not accepted from students with fewer than 30 or more than 75 credit hours. Minimum requirements for admission include a minimum GPA of 3.0, though achievement of the minimum GPA does not guarantee admission. Once admitted to the University, students desiring to enter an SMPA major face a highly selective process. Contact SMPA for specific information and applications; program application requirements vary and in some cases include achieving specific grades in certain courses and completion of an essay. Programs are listed below with their course offerings.

All students, both those admitted directly into SMPA and those applying after acceptance to GW, must achieve specified grades in some courses. Check with SMPA for particular grade requirements and course sequencing.

*Bachelor of Arts with a major in journalism and mass communication*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—AmSt 101 and 102 or Hist 71–72; PSc 2; Stat 53; one course chosen from Econ 11 or PSc 1 or 3.

3. The SMPA core—SMPA 51, 101, 102, 110 (which requires a minimum grade of *B* to apply for or remain in the major), 112, and 199.

4. Required courses in the major—SMPA 111 and either 173 or 177; four courses chosen from SMPA 130–143, 145, 146, 179, and 197; four courses chosen from SMPA 120, 128, 144, 159–178, 195, and 196.

*Bachelor of Arts with a major in political communication*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Required courses in related areas—AmSt 101 and 102 or Hist 71–72; PSc 2 and either 1 or 3; Stat 53.

3. The SMPA core—SMPA 51, 101, 102 (which requires a minimum grade of *C* to remain in the major), 110, 112, and 199.

4. Required courses in the major—SMPA 120; two 100-level PSc courses; seven courses chosen from SMPA 141, 145, 150–173, 178, 194, 196, 197, and 198.

*Combined Bachelor of Arts in an SMPA major and Master of Arts in media and public affairs*—Interested students should consult their advisor and the director of graduate studies and apply to the dual degree program during the second semester of their junior year.

*Combined Bachelor of Arts in an SMPA major and Master of Professional Studies in the field of political management*—Interested students should consult their advisor and apply to the dual degree program during the second semester of their junior year.

*Special Honors in journalism and mass communication*—Students with a 3.5 GPA in all courses completed at GW and in all courses required for the major may apply for Special Honors in journalism and mass communication. Students intending to apply must consult with their

advisor at the start of the senior year. Application must be made by the mid-point of the student's final semester (October 15 or March 15) and must include a letter of application and a portfolio of published or broadcast work. The work will be evaluated by the journalism and mass communication faculty on the basis of professional standards as outlined by the department.

*Special Honors in political communication*—Students with a 3.7 GPA in all courses completed at GW and in all courses required for the major may declare for Special Honors in political communication at the beginning of the senior year. Students take SMPA 199 in the first semester of the senior year and SMPA 198 in the second semester. To achieve Special Honors, the student must maintain the required GPA and present a successful oral defense of a research paper prepared for the Senior Seminar before a committee that includes the seminar instructor and two other faculty members nominated by the student and approved by the seminar instructor.

*Minor in journalism and mass communication*—Required: 18 credit hours, including SMPA 50 and 110; 6 credits chosen from 130–146; and 6 credits from 169–179, 195, 197.

**50 Media in a Free Society (3)**

Aday and Staff

The role of mass communication in democratic political systems: informational requirements of democracy, sources of political information and the role of news media and other channels in creating and disseminating it; issues relating to propaganda and public information; and the interaction between information flows and democratic political culture. Not open to SMPA majors.

**51 Research Methods (3)**

Gross, Manheim, and Staff

Processes of inquiry within mediated communication. The concepts of framing research questions, conducting literature reviews, developing a research design, and

interpreting results of cultural and social science research within a societal framework.

Prerequisite: Stat 53.

**101 Journalism and Mass Communication** Steele, Waisbord, and Staff

**Theory and Practice (3)**

An overview of journalism and mass communication in the United States.

Organizations and institutions of print and electronic news media; the social context of journalism; how news is constructed; and intellectual underpinnings of occupational ideals and professional practices that guide journalism. Open only to SMPA majors.

**102 Introduction to Political Communication (3)** Entman, Gross, Livingston

Basic concepts and theories of political communication; development of a framework for analyzing political communication; applications in the United States, other countries, and the international system. Open only to SMPA majors. Prerequisite: PSc 2.

**110 Introduction to News Writing and Reporting (3)** Staff

Fundamentals of news reporting and writing, with emphasis on the print media. News judgment, information gathering skills, and crafting news and feature stories. Regular in-class and outside reporting and writing exercises. Directly admitted freshmen may enroll in their second semester; all other freshmen need departmental permission. Laboratory fee.

**111 Advanced News Reporting (3)** May

Reporting, writing, and computer skills for covering beats and developing in-depth news stories. Techniques in researching, observing, and interviewing to frame stories of public interest; outside and in-class reporting and writing assignments. Restricted to

Journalism and Mass Communication majors or permission of instructor required.

Prerequisite: SMPA 110. Laboratory fee.

**112 Introduction to Digital Media Production (3)** Osder and Staff

Basic introduction to digital media production, including web design and video shooting/editing, with emphasis on use in journalism and political communication. Laboratory fee.

**120 Public Opinion (3)** Gross

Key aspects of the literature on public opinion, with emphasis on the role of media in opinion formation and change. Topics include the meaning of public opinion in a democratic society, a review of methods used to measure opinions, and media effects on opinion.

**128 Media, Politics, and Government (3)** Roberts

Exploration of the role played by communication, principally through the mass media, in the conduct of government and the making of public policy. Same as PSc 128.

**130 Computer-Assisted Reporting (3)** Staff

Retrieving information from online sources and government databases, with emphasis on the ethical use and evaluation of data. Use of computer databases to analyze records and produce reliable and valid data for investigative news stories. Prerequisite: SMPA 110. Laboratory fee.

**131 News Online (3)** Staff

The examination and practice of journalism on the Internet with an emphasis on news writing and presentation, including web page design. News standards, approaches to



online writing, ethics, and issues of access on the web. Production techniques.

Prerequisite: SMPA 110. Laboratory fee.

132 **Web Magazine Practicum (3)** Staff

For SMPA majors in the senior year. Students report, write, and edit online GW student news magazine. Prerequisite: SMPA 110. Laboratory fee.

133 **Photojournalism (3)** Staff

Elements of effective news and feature photos, including study and evaluation of slides taken by students. Picture selection, cropping, captions. Student costs include film and developing. Laboratory fee.

134 **Publication Design (3)** Staff

Design, editing, layout, and photo selection for newspapers and magazines. Selecting and editing stories; writing headlines and photo captions; sizing and cropping graphic materials; laying out pages. Ethics of editing. Student costs include film and developing.

135 **Broadcast News Writing (3)** Feldstein and Staff

Introduction to writing television news scripts based on actual events. Using workshop techniques, scripts are evaluated for content, structure, and use of words, pictures, and sound. Extensive writing and rewriting using streaming video from professional newscasts. Prerequisite: SMPA 110.

136 **Broadcast News Reporting (3)** Russell

Advanced techniques in television news reporting and editing. Students produce, shoot, and edit news packages by teaming up to report in the field. Prerequisite: SMPA 110.

137 **Broadcast News Studio Production (3)** Russell

Hands-on workshop designed to give simulated TV industry experience. Students work together to produce and direct a simulated broadcast news program. Recommended prerequisite: SMPA 135 or 136. Laboratory fee.

138 **Television Magazine (3)** Staff

Advanced techniques in writing, reporting, producing, and editing television news magazine packages. Prerequisite: SMPA 136. Laboratory fee.

139 **Television News Practicum (3)** Russell

For SMPA majors in the senior year. Students report, produce, direct, and edit GW student news broadcast. Prerequisite: SMPA 137. Laboratory fee.

140 **Washington Reporting (3)** May, Shanahan

Examination of reporting and writing techniques employed in news coverage of the national government, with an emphasis on serving a regional readership or audience. Using Washington as a laboratory, students focus on contemporary issues and news makers in the legislative and executive branches of government. Prerequisite: SMPA 110.

141 **Campaign Reporting (3)** May

Development of news gathering and writing skills needed for the coverage of political campaigns. Using in-class exercises and outside assignments, students acquire reporting and writing proficiency to illuminate how campaigns work and how politics affects the lives of citizens. Prerequisite: SMPA 110.

142 **Investigative Reporting (3)** Staff

Hands-on intensive training in reporting and writing in-depth enterprise news stories that expose hidden problems or wrong-doing. Prerequisite: SMPA 110.

**143 Feature Writing (3)**

Roberts

Development and writing of a wide range of feature articles, including interviews, profiles, op-ed columns, and personal memoirs. Weekly writing assignments and practical experience, including marketing work to publications. Prerequisite: SMPA 110.

**144 Narrative Journalism (3)**

Steele

The narrative or story-telling tradition in journalism. Students experiment with narrative techniques in a series of written exercises and a final project. Enrollment limited to 15 students with preference given to upper-class SMPA majors and graduate students. Prerequisite: SMPA 110.

**145 Editorial and Persuasive Writing (3)**

Keller

Techniques of editorial and column writing; editorial page and public affairs programming; function of commentary in a free press. Prerequisite: SMPA 110.

**146 Specialized Reporting (3)**

Staff

Advanced reporting in specialized fields, such as business, science, medicine. Topics and instructors vary each semester. Prerequisite: SMPA 110.

**150 Public Diplomacy (3)**

Staff

The theory and practice of public diplomacy: informing, influencing, and establishing dialogue with international publics and institutions. A conceptual and historical examination of public diplomacy, current practices, and contemporary issues,

including international information dissemination, educational and cultural exchange, and international broadcasting.

**151 Public Affairs and Government Information (3)** **Staff**

Aspects of information and public affairs functions of government agencies at all levels. Role of the information specialist. Writing and editing for government publications.

**152 Principles of Public Relations (3)** **Staff**

Principles, problems, ethics, and law of public relations for government, private concerns, educational and other public institutions.

**153 Strategic Political Communication (3)** **Manheim**

Origins of strategic approaches to political communication; techniques. Use of strategic communication by individuals, groups, organizations, and governments in both domestic politics and policymaking and in the international system. Prerequisite: SMPA 102 or permission of instructor.

**154 Political Campaign Communication (3)** **Staff**

Communication aspects of political campaigns for candidates and ballot issues. Examination of techniques and channels of communication, role of communication in campaign strategy, ethics and implications of campaign decision making.

**155 Campaign Advertising (3)** **Keller**

Introduction to the theory and practice of campaign advertising. Emphasis on televised political campaign spots, but a range of campaign advertising media are included: radio, direct mail, and the Internet.

**156 Political Debate (3)** **Keller**

Theory and practice of political debate. The campaign context, candidate strategies, debate issues, and debates and voter behavior. Participation in classroom debates.

**157 Political Speech Writing (3)**

Keller

Theory and practice of public speaking in the context of mediated political communication. Students analyze, write, and give speeches.

**158 Strategic Practicum (3)**

Manheim

Working in small groups, students research and develop full-scale plans for hypothetical, reality-based, strategic communication campaigns that test and apply theoretical advances in the field. Prerequisite: SMPA 153.

**159 Language and Politics (3)**

Staff

Connections between language and the political world. Theory and practice of language in politics and the impact on the creation and consumption of politics.

**160 Race, Media, and Politics (3)**

Gross, Entman

Examination of the place of race in American society and politics, with attention to the role of media reporting in helping to shape understanding of race and racial matters, public opinion about race, and race and electoral politics.

**161 Campaigns and Elections (3)**

Gross, Aday

The role of the news media in campaigns and elections. Offered in even-numbered years.

**162 Information, Media, and National Security (3)**

Staff

The influence of information technologies and global trends on statecraft and military conflict; the increasing power of media (including the Internet) and non-state actors in global affairs; and how policymakers, diplomats, and military leaders shape

communication strategies and adapt to the public dimension of national security in the post-9/11 world.

169 **International Communication** (3) Staff

Major international news-gathering and broadcasting organizations, international communications policy forums, organizations and treaties, spectrum allocation criteria, communications technology, and trade in communication.

170 **Comparative Media Systems** (3) Waisbord

In-depth study of the developmental, regulatory, political, economic, and cultural dimensions of selected foreign communication systems.

171 **Media in the Developing World** (3) Steele, Waisbord

Contemporary views of media roles in developing nations. The role of the press and electronic media in economic, social, and national development, including media as agents of modernization, development journalism, and post-colonial responses to Western “cultural imperialism.” Media and Islam; role of the Internet; and theories of media and globalization.

172 **Media and Foreign Policy** (3) Livingston

The emerging role of news media in international affairs and diplomacy, particularly as it relates to U.S. foreign policy. Globalization of news media advances in instantaneous communication technologies; consequences for international diplomacy.

173 **Media Law** (3) Sterling and Staff

Freedom of the press, censorship, legislative controls, copyright, laws of libel and privacy, and laws relating to the news business, privilege, and fair comment.

174 **Electronic Media Policy** (3) Sterling

Legal, technical, political, economic, and social aspects of radio, television, and cable and related delivery systems. Structure and operation of the FCC and other agencies; the role of Congress and the courts. Spectrum allocation, behavioral regulation, the trend to deregulate political influence, and current policy issues.

175 **Media Management** (3) Staff

Decision making, strategic planning, and daily operations of all types of media organizations. Sales strategies, promotion, and research.

176 **Changing Media Technology** (3) Harvey

Current and likely future trends in electronic media, with emphasis on radio, television, and cable, including developments in technology, programming, and public policy and their cultural implications.

177 **Media History** (3) Feldstein, Sterling

American media from colonial times to the present, set against a backdrop of ongoing political, social, and economic developments. The development of press, radio, television, cable, satellite, and the Internet; government regulation and media relations; journalistic rights and responsibilities.

178 **Media Effects** (3) Phalen

The impact of broadcasting and related media on audiences; social science research findings and methods, including persuasion, formation of opinion, media and personal interaction, the depiction of violence, audience characteristics and media use patterns, and development of related theories and models of mass communication.

179 **Documentary** (3) Sesno

Advanced techniques in writing, reporting, producing, and editing long-form television documentaries, including analysis of the techniques of propaganda and rhetoric used in film and television to visualize political ideology. Laboratory fee. Prerequisite: SMPA 136.

180 **Convergence and the Future of Journalism** (3) Shanahan

Reasons behind the decline of traditional newspaper and broadcast journalism; the impact of the web and other digital tools on traditional journalism values.

194 **Selected Topics in Political Communication** (3 or 4) Staff

Topic announced in the Schedule of Classes. May be repeated if the topic differs, but may only count once toward the political communication major.

195 **Selected Topics in Journalism and Mass Communication** (3 or 4) Staff

Topic announced in the Schedule of Classes. May be repeated for credit if the topic differs.

196 **Independent Study** (1 to 3) Staff

Students pursue a program of directed reading, research, and writing under the direction of a faculty advisor. Limited to seniors.

197 **Internship** (1 to 3) Staff

Students spend at least five hours per week per credit with an approved news organization, agency, or office under the general guidance of a faculty advisor.

Guidelines are available in the SMPA office and online. May be taken *P/NP* only.

Restricted to SMPA majors and minors in the junior and senior year. May be repeated for up to 6 credits.

198 **Special Honors Research Seminar** (3) Staff



Open only to special honors candidates in political communication in the senior year.

Prerequisite: SMPA 199 and departmental approval.

**199 Senior Seminar (3)**

Staff

Capstone course limited to SMPA majors.

**MUSIC**

*Professors* R.J. Guenther, L. Youens

*Associate Professors* K. Ahlquist (*Chair*), B. Fritz, D. Boyce

*Assistant Professors* R. Baker, E. Montague

*Adjunct Professors* K. Lornell, M. Peris (*Piano*), J.D. Levy (*Jazz*), J. Albertson (*Guitar*), F.B.

Conlon (*Piano*), T. Konstantinov (*Piano*), R. Birch (*Trumpet*), M. Findley (*Violin*), P. Fraize

(*Jazz Performance/Saxophone*), B. Dahlman (*Piano*), A. Rojas (*Guitar*), S. Hilmy

(*Electronic Studio*)

*Adjunct Instructor* G. Becker (*Choral*)

*Professorial Lecturers* E. Guenther (*Pipe Organ*), E. Field (*Violin*), C.J. Pickar, L. Barnet

(*Cello*), J. Krash (*Literature*), N. D'Alimonte (*Orchestra*), R. Ocampo (*Voice*)

*Lecturers* B.R. Seidman (*Harp*), S. Wellman (*Voice*), S.M. Fearing (*French Horn*), M. Von

Villas (*Opera*), J.C. Connell (*Percussion*), L. Gilliam (*Recorder*), A. Reiff (*Voice*), S. Stang

(*Flute*), L. Ferguson (*Clarinet*), A. Mikolajewski (*Piano Accompanist*), M. Scarlett (*Voice*),

G. Corella (*Tuba*), D. Jones (*Clarinet*), D. Sciannella (*Trombone*), E. Drennen (*Jazz Violin*),

D. Langan (*Voice*), C. Stabile-Libelo (*Oboe*), A. Lucini (*Latin Percussion*), J. Koczela

(*Bass*), P. Edgar (*Percussion*), J. Gascho (*Harpsichord*), E. Dircksen (*Bassoon*), U.

Wassertzug (*Viola*), A. Crockett (*Voice*), H. Burney (*Jazz Bass*)

*Bachelor of Arts with a major in music*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Mus 1, 2, 61 (or equivalent). Students must achieve grades of *C* or better in Mus 1 and 61 to declare the music major.
3. The language option listed under the General Curriculum Requirements of Columbian College.
4. Required courses in the major—Mus 101, 102, 105, 106, 126, 127, 139, 198; 4 credits of private performance study courses; 2 credits of music ensemble courses. In addition, 12 credits of music electives are required, at least 3 of which must be from a course numbered 162 and above. The distribution of these electives is as follows: history and literature (Mus 109, 110, 121, 122, 125, 175), 3 credits; theory and composition (Mus 70, 134, 135, 137, 161, 162, 174, 184), 3 credits; free electives in music, 6 credits. Because of the various options available in the B.A. program in music, students should consult with music faculty advisors at the earliest opportunity. All majors are expected to attend departmental lectures, master classes, and concerts, as appropriate.
5. Music majors are required to complete an approved independent project in their senior year, concurrently with registration in Mus 198. This project consists of a total of 2 to 6 credits, accumulated through registration for Mus 199 and/or any 100-level private performance study course.

*Special Honors in Music*—To receive Special Honors in music, a student must meet the requirements stated under University Regulations and maintain a 3.5 grade-point average in music courses and at least a 3.0 average overall. The student must complete the required senior independent project for at least 3 credits with a minimum grade of *A–*.

*Minor in music*—21 credit hours of music courses, consisting of Mus 1, 2, 61; 3 credits chosen from Mus 106, 126, 127; 3 credits chosen from Mus 105, 106, 109, 110, 121, 122, 125, 126, 127, 175; 3 credits of private performance study or ensemble; and 6 credits of music electives, two of which must be at the 100 level. All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

*Minor in jazz studies*—23 credit hours of music courses, consisting of Mus 1, 2, 8, 10, 61, 70, 161; 4 hours of jazz performance techniques (Mus 59–60 or 159–60); and 2 hours of ensemble participation (Mus 52 or 55). All minors are expected to attend departmental lectures, master classes, and concerts, as appropriate.

## **MUSIC THEORY, COMPOSITION, HISTORY, AND LITERATURE**

### **1 Elements of Music Theory (2)**

Boyce, Montague

Notation, scales, keys, intervals, terms, rhythms, and chord structure and progression.

Introduction to music literature, with emphasis on rudimentary aural analysis.

(Fall and spring)

### **2 Comprehensive Musicianship I (3)**

Boyce

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: Mus 1, 61.

(Fall and spring)

### **3 Music in the Western World (3)**

Krash and Staff

Introductory history of musical styles, related to listening; study of music materials and media. Not open to music majors. (Fall and spring)

### **4 Topics in Music (3)**

Staff

A rotating set of classes; topics may include: American music, a composer, the opera, and musical life in Washington, D.C. (Fall and spring)

**7 Music of the World (3)** Ahlquist

Introduction to music in culture through comparative study of music from a variety of cultures worldwide.

**8 History of Jazz (3)** Lornell

Introduction to the styles, composers, and performers of jazz music from its origins to the present. (Spring)

**10 Comprehensive Musicianship for Jazz (2)** Levy

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard, with emphasis given to skills associated with jazz performance. Prerequisite: Mus 2. (Fall)

**70 Introduction to Jazz Harmony (3)** Fraize

Analysis and composition of tunes in jazz/pop styles. Study of rhythmic characteristics, voice-leading, and chord/scale relationships within a jazz context.

Prerequisite: Mus 2.

(Spring)

**101 Harmony (3)** Boyce, Montague

Study of tonal harmonic practice from Baroque, Classical, Romantic, and 20th-century repertoires. Concurrent registration in the weekly keyboard lab is required.

Prerequisite: Mus 2. (Spring)

**102 Comprehensive Musicianship II (3)** Boyce, Montague

Aural and keyboard skills development through dictation, sight singing, and performance and improvisation at the keyboard. Prerequisite: Mus 101. (Fall and spring)

**105 Introduction to Ethnomusicology (3)** Ahlquist, Lornell

Models of understanding music as a cultural endeavor. Application and critique of models in the design and execution of student independent field research. Prerequisite: Mus 1 or Anth 2 or 4 or permission of instructor. Same as Anth 105. (Spring)

**106 Music History III: 20th-Century Art Traditions (3)** Staff

Western musical traditions and styles since Romanticism and approaches to music as art in contemporary society. Prerequisite: Mus 1. (Fall)

**109 Orchestra Literature (3)** Guenther

History and styles of orchestra literature, analysis of representative works. Prerequisite: Mus 101 or permission of instructor.

**110 Chamber Music Literature (3)** Youens

History and styles of chamber music literature, analysis of representative works. Prerequisite: Mus 101 or permission of instructor.

**121 Opera (3)** Youens

History and styles of opera, analysis of representative works. Prerequisite: Mus 101 or equivalent. (Fall)

**122 Music in the United States (3)** Ahlquist

History of music and musical life in the United States, emphasizing relationships among traditions of diverse origin. Prerequisite: Mus 1 or permission of instructor.

**125 Keyboard Music Literature (3)** Staff

History and styles of keyboard literature from the 16th century to the present.

Prerequisite: Mus 101 or equivalent.

**126 Music History I: Antiquity through Early Baroque (3)**

Youens

The development of Western European music from its earliest traceable roots to the end of the early, experimental Baroque period. Prerequisite: Mus 2 and sophomore standing. (Spring)

**127 Music History II: The Tonal Era (3)**

Ahlquist

Styles, structures, social foundations and aesthetic change in European music of the late 17th through the late 19th centuries. Prerequisite: Mus 2.

**134 Composition (3)**

Boyce

Introduction to 21st-century compositional practice; concepts of post-tonal analysis; emphasis on style studies and original student works. May be repeated for credit. Prerequisite: Mus 101.

**135 Counterpoint (3)**

Staff

Study and practice of 16th-century contrapuntal techniques. Prerequisite: Mus 2.

**137 Orchestration (3)**

Staff

Instrumental scoring. Prerequisite: Mus 101.

**139 Form and Analysis (3)**

Montague

Analysis of musical forms in representative musical literature. Prerequisite: Mus 101 or equivalent. (Fall)

**161–62 Electronic and Computer Music (3–3)**

Hilmy

Fundamental electronic and computer music concepts. Analog and digital sound synthesis techniques and theory, MIDI, studio recording techniques, signal processing,

properties of sound, acoustics and psycho-acoustics, history and aesthetics. Laboratory fee. Mus 161 is prerequisite to Mus 162.

173 **Pedagogy (3)** Staff

Principles, materials, and methods of teaching in selected areas. Prerequisite: permission of instructor.

174 **Topics in Music Theory and Composition (3)** Staff

A seminar on variable topics in the discipline of music theory, analysis, and composition. Topics may include analysis of post-tonal music, advanced jazz arranging, analysis of 14th-century vocal music, developments in extended instrumental techniques since 1950. Prerequisites depend on the topic; consult the department.

175 **Topics in Music History and Literature (3)** Staff

A seminar on variable topics in music history and literature in all traditions and styles. Topics may include German musical Romanticism, introduction to critical musicology, the music of Josquin des Prez, and vernacular music in Washington, D.C. Prerequisites depend on the topic; consult the department.

184 **Advanced Composition (3)** Boyce

Private instruction in composition in tutorial format. Prerequisite: Mus 134.

198 **Senior Seminar (1)** Staff

Restricted to music majors in their final spring semester. Presentations of required senior projects in process; readings and discussion to place the projects in a broader musical and intellectual context. Corequisite: Mus 199 or any 100-level private performance study course.

**199 Independent Research (1 to 4)**

Staff

Under the guidance of an assigned instructor. May be repeated for credit. Majors in their senior year take Mus 198 as a corequisite.

**PERFORMANCE STUDY**

Performance study courses are offered both fall and spring, and may be repeated for credit. Music majors and minors, Presidential Arts Scholarship students, and other students with skills or potential appropriate to the department's select ensembles are eligible for private lessons. Eligibility and placement for students new to private performance study are determined at a placement fair held at the beginning of each semester. For courses numbered 11 through 50 and 57 through 60, students may not register in the same semester for both the 1- and 2-credit course in the same instrument or in voice. Mus 51, 52, 53, 55, 56, 151, and 153 do not include individual lessons and do not require a supplementary fee. All other performance study courses include individual lessons and require a supplementary fee. Supplementary fees for private performance courses are nonrefundable after the first two weeks of the fall and spring semesters; consult the Music Department for details.

The supplementary fee is waived during the fall and spring semesters for full-time music majors and minors and for music Presidential Scholars in the Arts.

**Required practice:** a minimum of three hours a week for 1-credit courses and six hours a week for 2-credit courses.

11–12 **Piano** (1–2)

Staff

13–14 **Voice** (1–2)

Staff

15–16 **Pipe Organ** (1–2)

E. Guenther

17–18 **Violin** (1–2)

Field, Findley



|       |                                 |                 |
|-------|---------------------------------|-----------------|
| 19–20 | <b>Classical Guitar</b> (1–2)   | Rojas           |
| 21–22 | <b>Viola</b> (1–2)              | Wassertzug      |
| 23–24 | <b>Cello</b> (1–2)              | Barnet          |
| 25–26 | <b>Bass</b> (1–2)               | Koczela         |
| 27–28 | <b>Flute</b> (1–2)              | Stang           |
| 29–30 | <b>Recorder</b> (1–2)           | Gilliam         |
| 31–32 | <b>Oboe</b> (1–2)               | Stabile-Libelo  |
| 33–34 | <b>Clarinet</b> (1–2)           | Ferguson, Jones |
| 35–36 | <b>Saxophone</b> (1–2)          | Fraize          |
| 37–38 | <b>Bassoon</b> (1–2)            | Dirksen         |
| 39–40 | <b>French Horn</b> (1–2)        | Fearing         |
| 41–42 | <b>Trumpet</b> (1–2)            | Birch           |
| 43–44 | <b>Trombone</b> (1–2)           | Sciannella      |
| 45–46 | <b>Percussion</b> (1–2)         | Edgar, Connell  |
| 47–48 | <b>Harp</b> (1–2)               | Seidman         |
| 49–50 | <b>Tuba</b> (1–2)               | Corella         |
| 51    | <b>University Orchestra</b> (1) | D’Alimonte      |

Preparation and performance of orchestral literature. Prerequisite: audition before director.

|    |                                  |       |
|----|----------------------------------|-------|
| 52 | <b>Instrumental Ensemble</b> (1) | Staff |
|----|----------------------------------|-------|

Chamber ensemble groups are approved by audition. Section numbers are .11 guitar ensemble, .12 percussion ensemble, .13 jazz combo, .14 keyboard ensemble, .15 string

ensemble, .16 woodwind ensemble, .17 brass ensemble, .18 Baroque ensemble, .19

Latin band, .20 blues band.

**53 University Singers (1)** Becker

Preparation and performance of choral literature. Prerequisite: audition before director.

Section .10 is University Singers; Section .11 is Chamber Choir.

**55 Jazz Band (1)** Levy

Preparation and performance of classic and contemporary “big band” literature.

Prerequisite: audition before director.

**56 University Band (1)** Fritz, Birch

Section .10 is University Symphonic Band; Section .11 is University Wind Ensemble.

**57–58 Harpsichord (1–2)** Gascho

**59–60 Jazz Performance Techniques (1–2)** Staff

Section numbers are .10 piano, .11 bass, .12 percussion, .13 guitar, .14 brass, .15

woodwind.

**61–62 Class Piano for Music Majors and Minors (1–1)** Mikolajewski

Study of the rudiments of musical notation and piano playing in a small classroom

setting. Open to majors and minors who need basic keyboard facility.

**Departmental prerequisite:** Private performance courses 112 through 160 are open by examination.

**Required practice:** a minimum of eight hours a week for 2-credit courses.

**112 Piano (2)** Staff

**114 Voice (2)** Staff

**116 Pipe Organ (2)** E. Guenther

118 **Orchestral Instrument** (2) Staff

120 **Classical Guitar** (2) Rojas

151 **Conducting** (3) Fritz

Technique of conducting, score reading, rehearsal procedures, analysis, and interpretation of selected musical literature; practice in conducting. Prerequisite: Mus 101. (Fall, even years)

153 **Vocal Theater Workshop** (1) Von Villas, Conlon

Development of body awareness for the stage, acting improvisations, and character development. Scenes chosen from the opera, operetta, and musical theater repertoire. Musical coaching, use of makeup, and audition preparation.

158 **Harpsichord** (2) Gascho

160 **Jazz Performance Techniques** (2) Staff

185 **Advanced Performance Study** (3) Staff

Private study in vocal or instrumental performance. Public performance and a minimum of 12 hours of practice per week are required. Prerequisite: audition before a faculty committee.

## **NAVAL SCIENCE**

*Professor B.G. Gawne (Chair)*

*Associate Professor J. Arleth*

*Assistant Professors K. Meeuf, C. Berntsen, J. Coker, B. Curran, T. Moulder*

### **Naval Reserve Officers Training Corps Program**

The Naval Reserve Officers Training Corps (NROTC) offers young men and women the opportunity to qualify for a full scholarship and a commission in the Navy or Marine Corps.

NROTC midshipmen are required to complete the naval science courses and attend weekly professional seminars. During the summer, NROTC midshipmen participate in active duty at sea or shore-based training cruises for approximately four weeks. Upon receiving the baccalaureate and completing the NROTC program, qualified midshipmen are commissioned as ensigns in the U.S. Navy or second lieutenants in the Marine Corps. Commissioned naval officers go on to training in various warfare specialties and serve as surface or submarine officers, naval aviators, or SEALs. Marine Corps officers attend basic school in Quantico, Virginia, and serve in fields such as infantry, artillery, and aviation. Staff positions (intelligence, law, medicine) are not normally offered through NROTC. Students may join the NROTC through any one of the following programs.

*Four-Year Scholarship Program*—Students enter the NROTC Four-Year Scholarship Program through national competition and are appointed midshipmen in the Naval Reserve. While enrolled, a four-year-scholarship student receives government-provided tuition, fees, \$350 per semester for books, uniforms, and an allowance of up to \$400 per month. Upon graduation, students are commissioned with a minimum four-year active duty service obligation. Scholarship Program students must include in their degree program courses in English, calculus, cultural awareness, physics, national security policy, and naval science and participate in three summer training periods of approximately four weeks each.

*Two-Year Scholarship Program*—Selection for this program is made through national competition, based on the student's academic record, physical qualifications, and an interview. Application should be made by the middle of the fall semester of the student's sophomore year. Selected applicants attend six weeks of instruction at the Naval Science Institute (NSI) at Newport, Rhode Island, during the summer before their third academic year. At NSI, students

take courses in naval science, physical fitness, and drill, similar to those required of four-year NROTC students during their freshman and sophomore years. Successful completion of the NSI program qualifies the two-year applicants for appointment as midshipmen in the Naval Reserve and enrollment in the NROTC Scholarship Program. Upon acceptance of this appointment, students receive all the benefits and assume all the obligations of midshipmen in the Four-Year Scholarship Program.

Entering freshmen and transfer students who are awarded NROTC scholarships and plan to live on campus may also be eligible for GW Residence Hall Awards from the University. NROTC scholars with prior experience in the Navy are eligible for awards covering the nominal charges for on-campus housing and meals. NROTC scholars who are new to the Navy and are majoring in mathematics, chemistry, physics, or a program in the School of Engineering and Applied Science may receive up to \$4,000 to be applied toward the costs of on-campus housing and meals. Further information on these awards is available from the University Office of Admissions.

*Four-Year College Program*—Students are enrolled in a non-scholarship Four-Year College Program upon acceptance by the Department of Naval Science. Uniforms are provided, and during their junior and senior years, students receive up to \$400 per month. Students must include in their degree program courses in college algebra, science, and naval science and must attend the four-week at-sea training period between junior and senior year. Upon commissioning, College Program students serve a minimum of four years' active duty. Midshipmen who complete one term as College Program students, have a satisfactory academic record, and are physically qualified may compete for a scholarship awarded by the Chief of Naval Education and Training. If awarded, the scholarship will be for the remainder of the student's undergraduate

enrollment, up to a maximum of three and a half years; service requirements and benefits are the same as for the scholarship programs.

*Two-Year College Program*—Application should be made by the middle of the fall semester of the student's second year. Selections are made through the Chief of Naval Education and Training, based on the student's academic record, physical qualifications, and an interview. Those students selected will attend the NSI and upon successful completion may enroll in the program. The benefits and obligations are the same as for the Four-Year College Program.

*Requirements for all candidates*—Qualifications for acceptable candidates for the Scholarship Program or the College Program include U.S. citizenship, fulfillment of physical requirements, and willingness to participate in required summer training periods and to accept a commission in the U.S. Navy or Marine Corps when offered.

Enrollment in NROTC is not a requirement for taking naval science courses. Any student enrolled at George Washington University may take naval science courses with the approval of the Professor of Naval Science.

### **Degree Credit for Naval Science Courses**

*Columbian College of Arts and Sciences*—NSc 126, 160, 176, and 180 are acceptable as electives. NSc 51, 52, 125, 150, 151, or 175 may be accepted as professional credit.

*School of Engineering and Applied Science*—NSc 126 and 160 may be used for social science credit. Technical elective credit is acceptable as follows: for majors in civil engineering and mechanical engineering—NSc 52, 150, 175; for majors in electrical engineering—NSc 52 and 150; for majors in systems engineering—NSc 150, 151, 175, and 176.

*School of Business*—All NSc courses are applicable to the B.B.A. and B.Accy. degree programs; check with the director of undergraduate advising and student services in School of Business.

*Elliott School of International Affairs*—NSc 126, 160, 175, 176, and 180 may be used as elective credit in all undergraduate programs.

**51 Introduction to Naval Science (3)**

Introduction to the naval profession and to concepts of sea power. The mission, organization, and warfare components of the U.S. Navy and Marine Corps. Overview of officer and enlisted ranks and rates, training and education, and career patterns. Naval courtesy and customs, military justice, leadership, and nomenclature. Professional competencies required to become a naval officer.

**52 Naval Ships Systems I (Engineering) (3)**

A detailed study of ship characteristics and types, including ship design and control, propulsion, hydrodynamic forces, stability, compartmentation, and electrical and auxiliary systems. Included are basic concepts of the theory and design of steam, gas turbine, and nuclear propulsion.

**125 Naval Ships Systems II (Weapons) (3)**

Theory and employment of weapons systems, including the processes of detection, evaluation, threat analysis, weapon selection, delivery, guidance, and explosives. Fire control systems and major weapon types, including capabilities and limitations. Physical aspects of radar and underwater sound. Facets of command, control, and communications as means of weapons system integration.

**126 Sea Power and Maritime Affairs (3)**

A survey of the U.S. naval history. Naval aspects of U.S. conflicts from the American Revolution to the global war on terror. The influence of technological innovation, domestic politics, and foreign policy on the development and execution of naval doctrine and tactics.

**150 Navigation (3)**

Development of practical skills in naval piloting procedures. Charts, visual and electronic aids, and magnetic and gyro compasses; inland and international rules of the nautical road. The celestial coordinate system, including spherical trigonometry and how celestial information can be applied to navigation at sea. Environmental factors affecting naval operations.

**151 Naval Operations and Seamanship (3)**

Relative motion vector analysis theory, formation tactics, and ship employment; practical skills in relative motion problems. Controllable and noncontrollable forces in shiphandling, ship behavior, and maneuvering characteristics; various methods of visual communication, including flaghoist, flashing light, and semaphore.

**160 Evolution of Warfare (3)**

This course traces the development of warfare, from earliest recorded history to the present, with focus on the impact of major military theorists, strategists, tacticians, and technological developments. The student acquires a basic sense of strategy and develops an understanding of military alternatives and the impact of historical precedent on military thought and actions.

**175 Leadership and Management (3)**



Organizational behavior, management, and leadership principles in the context of naval organization. The management functions of planning, organizing, leading, and controlling; individual and group behavior in organizations; motivation and leadership. Decision making, communication, responsibility, authority, and accountability.

**176 Leadership and Ethics (3)**

A capstone course that completes the NROTC preparations for midshipmen commissioning as Ensigns and Second Lieutenants. Application of Western moral traditions and ethical philosophy to issues involving military leadership, core values, the Uniform Code of Military Justice, and Navy regulations.

**180 Amphibious Warfare (3)**

A historical survey of the development of amphibious doctrine and the conduct of amphibious operations. The evolution of amphibious warfare in the 20th century, especially during World War II. Present-day potential and limitations on amphibious operations, including the concept of rapid deployment force.

**ORGANIZATIONAL SCIENCES AND COMMUNICATION**

*Professors* C. Warren, L. Offermann

*Associate Professors* E.B. Davis, D.P. Costanza (*Chair*)

*Assistant Professors* J.C. Miller, N. Olsen, A.J. Critchfield, G. Debebe, M. Still, T. Behrend

*Adjunct Professor* C. Kiesinger

*Professorial Lecturers* Q. Ahmed, M.A. DiMola, V. Grady, E. van Iersel

*Lecturers* C.M. Hanson, A. Weiner, S. Coleman, S. Talan, B. Berger, D. Coultice-Christian

The communication major is offered by the Department of Organizational Sciences and Communication. Students are accepted as communication majors through a selective application

process. Students are encouraged to apply during the first semester, or early in the second semester, of their sophomore year. Applications are not accepted from students with more than 75 credit hours. A student may apply no more than twice to the major. Minimum requirements for admission include a GPA of 3.3 and completion of, or current enrollment in, one of three courses: Comm 25, 40, or 41. Achievement of the minimum GPA does not guarantee admission to the major, because the acceptance process is selective. Application forms and the Student Handbook for Communication Majors, which provides additional information about the major, including the application process, are available in the program office.

*Bachelor of Arts with a major in communication*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in the major: Comm 25, 40, 41, 100, 110, 150, 199; 18 additional hours of 100-level courses in communication, as approved by the major advisor.
3. Required courses in related areas: 15 credit hours of 100-level courses in one other department, program, or field of study, as approved by the major advisor; this requirement may be fulfilled by completion of a second major or a minor or secondary field. Any course counted toward the major may not also be counted toward the minor.

*Special Honors*—Seniors majoring in communication may earn Special Honors if they meet the following criteria: (1) the Special Honors requirements stated under University Regulations; (2) selection to Lambda Pi Eta, the National Communication Association Honor Society, which maintains a chapter in the GW Communication Program (i.e., open to majors who have completed a minimum of 24 hours in communication course work, who hold a grade-point average of 3.3 in communication courses and a grade-point average of 3.0 overall, and who are

recommended by a majority of the full-time communication faculty); and (3) a grade of *A* on the thesis required in Comm 199, Senior Seminar.

*Minor in communication*—Required: 18 credit hours, including Comm 25, 40 or 41, 120, 150, and two 100-level electives in communication.

*Minor in organizational communication*—Required: 18 credit hours, including Comm 170, 171; OrSc 109; Psyc 144; plus two courses selected from Comm 120, 140, 173, 174, 176; Psyc 119.

*Minor in organizational sciences*—Required: 18 credit hours, including OrSc 109, 116, 143; Psyc 144; plus two courses selected from Comm 170, 171, 173; Psyc 119, 193.

## COMMUNICATION

### 25 **Introduction to Communication Studies** (3)

Miller

Introduction to historical and intellectual development of the field. Students survey the origins of contemporary theory; learn about fundamental concepts, models, investigative tools, and contexts of communication; and explore a variety of professional opportunities awaiting communication graduates.

### 40 **Public Communication** (3)

Staff

Study and practice of the basic techniques of public speaking used to inform, to entertain, and to persuade audiences. Emphasis on the speech-building process: audience analysis, research, development, composition, organization, style, delivery, and criticism.

### 41 **Interpersonal Communication** (3)

Staff

Study and practice of verbal and nonverbal communication in ritual, information and perspective sharing, problem solving, and relationship formation, maintenance, and

dissolution. Designed to raise awareness of the complexity and power of the communication process in daily life and to help students develop interpersonal skills cognitively, affectively, and behaviorally.

**42 Business and Professional Speaking (3)** Staff

Study of the communication process in business and professional organizations; practice in interviewing, small group communication, and public presentations. For non-majors and non-minors only.

**100 Communication Theory (3)** Critchfield

Inquiry into the nature and function of communication theory as a framework for the study of communicative behavior. Emphasis is placed on analysis of paradigmatic approaches in rhetorical, interpersonal, and mass communication theories and models, and on examination of contemporary research literature in communication.

Prerequisite: Comm 25.

**110 Research Methods (3)** Kiesinger

Processes of inquiry within interpersonal and public communication. Students are introduced to concepts of framing research questions, conducting literature reviews, developing a research design, using qualitative and quantitative research tools, and interpreting results of research in communication. Prerequisite: Comm 100.

**120 Small Group Communication (3)** Warren and Staff

The study and practice of communication in small groups, focusing on problem solving, norms, roles, and leadership. Prerequisite: Comm 25 or permission of the instructor.

**140 Nonverbal Behavior (3)** Critchfield and Staff

Introduction to predominant theories, principles, and problems in the study of nonverbal behavior; application of research results to everyday life. Topics include facial expression, eye behavior, physical appearance, body movement and gestures, tactile messages, vocal characteristics, use of time, spatial dynamics, gender and life-stage differences.

**150 Persuasion (3)**

Warren

In-depth study of the principles and techniques of persuasion from both production and consumption perspectives, in both personal and mediated contexts. Emphasis on the common-premise model, with consideration of such topic areas as pathos/ethos/logos, attitude and behavior change, effectiveness, ethics, and subconscious influence.

Prerequisite: Comm 25.

**170 Organizational Communication (3)**

Critchfield

Exploration of the philosophy, process, problems, and potential of human communication within organizational contexts. May involve experiential workshops and fieldwork. Prerequisite: Comm 41 or 120 or permission of instructor.

**171 Professional Communication (3)**

Staff

Principles and theories of communication applied to situations encountered in organizational and professional environments. Development of knowledge and abilities for workplace tasks, such as interviewing, facilitating meetings, providing performance appraisals, designing and delivering instructional materials and other professional presentations.

**172 Health Communication (3)**

Staff

Exploration of the nature, functions, and impact of relational communication in the context of health care. Both formal (health care organizations) and informal (family communication) systems may be studied. Topics can include provider–patient interaction, media and health, confirmatory communication. Prerequisite: Comm 41 or 100 or permission of instructor.

**173 Communication in a Mediated World (3)** Staff

An exploration of human-to-human communication mediated by computer technology. Traditional communication theories are applied and adapted to the computer-mediated realm; newer theories of computer-mediated communication are addressed.

**174 Intercultural Communication (3)** Miller

Exploration of the process, trends, rewards, and difficulties of human communication in intercultural contexts, with an eye toward establishing guidelines for mitigating miscommunication across cultures. May involve fieldwork. Prerequisite: Comm 41 or permission of instructor.

**176 Issues and Image Management (3)** Staff

The issues and image management function in corporate, professional, and nonprofit organizations. Assignments may include in-class collaboration on case studies of communication campaigns and crisis communication strategies, interviews with professionals in the practice of communication management, and a communication audit of strategies and messages of a selected organization.

**180 Communication Criticism (3)** Miller

Evaluation of communication paradigms along critical dimensions of analysis. Prerequisite: Comm 40 or 150 or permission of instructor.

190 **Selected Topics** (3) Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

196 **Independent Study** (1 to 3) Staff

Independent research and special projects. Open to seniors or exceptionally well-prepared juniors majoring in communication. Before students are permitted to register, they must submit a written proposal of the plan of study and obtain approval of the faculty member who will direct the study and of the program chair.

197 **Internship** (3) Warren

For communication majors and minors. Student-secured internships in public or private communication-related organizations in the metropolitan area. Students spend at least 15 hours per week doing communication-related work. Meetings, reports, and/or analysis paper are required. Admission requires prior program approval. Graded on a Pass/No Pass basis.

199 **Senior Seminar** (3) Warren, Critchfield, Miller

Capstone course limited to communication majors. Selected reading and discussion. Each student works on an individually designed research project throughout the term, the results of which will be presented in a major paper. Prerequisite: Comm 100 and 110.

## **ORGANIZATIONAL SCIENCES**

109 **Strategic Systems Thinking in Organizations** (3)

The evolution of organizations in terms of social context and the present-day systems environment. Emerging roles of leadership, communication, and employer–employee

relationships. Organizational models are used to develop strategic thinking about career and life roles.

**116 Leading Change (3)**

An in-depth introduction to and analysis of concepts and techniques of leadership, including motivation, goal alignment, incentives, teamwork, and communication. Conceptual and empirical background of the management of change.

**143 Leadership and Performance (3)**

Leadership from an organization system perspective. Theory, research, and applications pertaining to how leaders can reduce uncertainty through appropriate adaptive change.

**190 Special Topics (3)**

Topics to be announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**PHILOSOPHY**

*University Professor* P.J. Caws

*Professors* W.B. Griffith, R.P. Churchill, D. DeGrazia (*Chair*), G. Weiss

*Associate Professors* J.C. Brand-Ballard, T. Zawidzki

*Assistant Professors* M. Friend, E.J. Saidel, G. Van Cleemput

*Adjunct Professors* C. Venner, T. Samaras

*Professorial Lecturers* R. Carr, L. Eby, T. Romanovskaya

Two options are offered for the major in philosophy, both designed to give a broad background in philosophy but with somewhat different emphases. The first option reflects the traditional structure of the discipline and its subfields; it is especially (but not exclusively)



recommended for those considering the possibility of graduate study in philosophy. The second option is designed for those primarily interested in philosophy in its relationship to public affairs.

*Bachelor of Arts with a major in philosophy (traditional option)*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Phil 51; Phil 45 recommended.
3. Required courses in related areas—3 hours of non-Western religious philosophy selected from Rel 152, 157, 158, 160, 161, 164.
4. Required courses in the major—a minimum of 30 credit hours, including as foundational courses Phil 111, 112, 131; one course selected from Group A (value theory)—Phil 125, 132, 133, 142, 162; one course from Group B (epistemological)—Phil 121, 151, 152, 153; one course from Group C (later history)—Phil 113, 172, 192, 193; the proseminar—Phil 198; plus three electives chosen from 100-, 200-, or 700-level courses, selected in consultation with a departmental advisor.

Phil 121, 151, 153, 192, and 193 are recommended for students considering graduate-level study of philosophy; French or German language study is recommended as well.

*Bachelor of Arts with a major in philosophy (public affairs option)*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Phil 51; Phil 45 recommended.
3. Required courses in related areas—6 credit hours selected from Hist 39–40, 71–72; PSc 105, 106, 107, 110, 114, 115; Econ 11–12, 101–2, 104.

4. Required courses in the major—a minimum of 30 credit hours, including as foundational courses Phil 111, 112, 131, 132; two courses selected from Group A (value theory)—Phil 125, 133, 135, 142, 162; one course from Group B (epistemological)—Phil 121, 151, 152, 153; the proseminar—Phil 198; two electives selected in consultation with the advisor from 100-, 200-, or 700-level courses.

*Combined Bachelor of Arts with a major in philosophy (public affairs option)/Master of Arts in the field of public policy with a concentration in philosophy and social policy*—Students interested in this program should consult a departmental advisor as soon as possible.

*Special Honors*—In addition to the general requirements stated under University Regulations, in order to be considered for graduation with Special Honors, a student must (1) have a 3.7 grade-point average in the major and at least a 3.25 average overall; (2) submit an honors paper prepared under the supervision of a faculty advisor in the department. Only if a committee of three faculty members in the department approves the honors paper will Special Honors be recommended.

*Minor in philosophy*—Required: a minimum of 18 credit hours of philosophy courses, including two courses chosen from Phil 51, 111, 112, 113, 172; one course from Phil 125, 131, 132, 133, 135, 142, 162; and one course from Phil 121, 151, 152, 153.

*Minor in logic*—Required: 18 credit hours of logic-focused courses, of which 12 credits must be at the 100 level, with at least one course in philosophy and one course in mathematics. Courses are chosen with approval of the advisor from lists of designated courses in philosophy, mathematics, computer science, and linguistics. No more than two courses may count toward both the student's major and the minor in logic.

*Minor in applied ethics*—Required: 18 credit hours of philosophy courses, including Phil 51, 131, and 132, plus Phil 133, 135, 142, or with permission of the instructor, seniors may select from Phil 230, 231, 238, 242, 250, 262, which are listed in the Graduate Programs Bulletin.

*Minor in mind–brain studies*—Required: a minimum of 18 credit hours, including Phil 153 and Psyc 122, plus four electives chosen from designated courses in anthropology, philosophy, psychology, and speech and hearing sciences, with no more than two electives drawn from any one department.

**45 Introduction to Logic (3)**

Friend, Saidel, and Staff

Introduction to informal logic, scientific argument, and formal logic. The informal logic component focuses on fallacies of reasoning and practical applications of logic. The formal logic component focuses on translation from English into propositional logic, truth tables, and proofs in propositional logic. (Fall, spring, and summer)

**51 Introduction to Philosophy (3)**

Staff

Readings from major philosophers and study of their positions on the most basic questions of human life. Topics include such issues as: What is justice? What is knowledge? What is reality? Does God exist? What is the mind? Do humans have free will? (Fall, spring, and summer)

**62 Philosophy and Film (3)**

Caws

Philosophical problems and theories of perception, meaning, personal identity, and moral agency and their illustration in the context of cinema. Cinema and its derivatives (TV, video) as prime routes to experience of the natural and social worlds in an age of communication. Readings in classical and contemporary philosophy and in film theory; screening of a series of films. (Spring)

**111 History of Ancient Philosophy (3)** Van Cleemput

History of Western philosophy from the Pre-Socratics to the Stoics (6th century BCE to 1st century CE). Major emphasis on the writings of Plato and Aristotle. Among themes to be covered: knowledge and reality, political and moral philosophy.  
(Fall and spring)

**112 History of Modern Philosophy (3)** Churchill

History of Western philosophy of the 16th through 18th centuries; Continental Rationalism and British Empiricism from the scientific revolution through the Enlightenment; major emphasis on Descartes, Spinoza, Leibniz, Locke, Berkeley, Hume, and Kant. Prerequisite: Phil 51 or equivalent. (Fall and spring)

**113 19th-Century Philosophy (3)** Carr and Staff

European philosophy of the 19th century, with major emphasis on Kant, Hegel, Schopenhauer, Kierkegaard, and Nietzsche. Prerequisite: Phil 51 or equivalent. (Fall)

**121 Symbolic Logic (3)** Friend and Staff

Analysis and assessment of deductive arguments, using propositional, predicate, and other logics; philosophical basis and implications of logical analysis; metatheory of logic; modal and non-standard logics. Prerequisite: Phil 45 or permission of instructor.  
(Fall and spring)

**125 Philosophy of Race and Gender (3)** Weiss and Staff

A theoretical examination of the bodily, social, discursive, and political effects of patriarchy, racism, and classism. (Fall and spring)

**131 Ethics: Theory and Applications (3)** DeGrazia and Staff

Examination of leading ethical theories (e.g., utilitarianism, deontology, virtue ethics), and methodology in ethics. Engagement with contemporary problems.

(Fall and spring)

**132 Social and Political Philosophy (3)**

Brand-Ballard, Churchill

Philosophical theories about how economic, political, legal, and cultural institutions should be arranged. Topics include the meaning and significance of liberty, the legitimate functions of government, the nature of rights, the moral significance of social inequality, and the meaning of democracy. (Fall and spring)

**133 Philosophy and Nonviolence (3)**

Churchill

Violence and nonviolence in the personal and social struggle for meaningful, just, and peaceful existence; philosophical foundations of pacifism and nonviolent resistance in the thought of Tolstoy, Gandhi, King, and others; philosophical inquiry into war, terrorism, genocide, and ethnic conflict, as well as human rights, humanitarian intervention, and just war theory. (Fall)

**135 Ethics in Business and the Professions (3)**

Staff

Ethical theories and basic concepts for analysis of moral issues arising in business and in professional practice. (Fall and spring)

**142 Philosophy of Law (3)**

Brand-Ballard

Systematic examination of fundamental concepts of law and jurisprudence; special emphasis on the relationship between law and morality. (Fall)

**151 Philosophy and Science (3)**

Zawidzki

Analysis of the structure and meaning of science, including scientific progress and theory change, objectivity in science, the drive for a unified science, and ways science

relates to everyday understandings of the world. Attention given to various sciences, including physics, biology, and neuroscience. Prerequisite: Phil 51 or two semesters of college-level science. (Fall)

**152 Theory of Knowledge (3)**

Zawidzki

Inquiry into the basis and structure of knowledge, the problems of skepticism and justification, the relations between subjectivity and objectivity, and the contributions of reason, sense, experience, and language. Prerequisite: Phil 51 or equivalent; Phil 112 also recommended. (Spring)

**153 Mind, Brain, and Artificial Intelligence (3)**

Zawidzki, Saidel

Investigation of the nature of mind from a variety of perspectives, including neuroscience, cognitive psychology, and artificial intelligence, as well as traditional philosophy of mind. Possible additional topics include consciousness, mental disorders, animal minds, and the nature and meaning of dreams. (Spring)

**161 Philosophy and Literature (3)**

Weiss

Critical investigation of the sociopolitical commitments that inform the practices of reading and writing as discussed by Sartre, Barthes, Foucault, Baudrillard, and others. Focus on the development of existentialist themes, including authenticity, freedom, temporality, and death in the work of Kafka, Tolstoy, Mann, Woolf, Sexton, and Stein. (Spring, alternate years)

**162 Aesthetics (3)**

Weiss

The problem of artistic representation and the nature of aesthetic experience as related to the creation, appreciation, and criticism of art. Special emphasis on

nonrepresentational works of art and their interpretation. Prerequisite: Phil 51 or 111 or 112 or 113. (Fall)

**172 American Philosophy (3)**

Caws, Carr

A survey of American philosophical thought, focusing on the late 19th through mid-20th centuries. Covers American Pragmatism (Peirce, James, Dewey) in depth; other authors may include Thoreau, Emerson, Royce, Santayana, Mead, Quine, and Rorty. (Spring)

**192 Analytic Philosophy (3)**

Saidel, DeGrazia

The dominant movements of 20th-century Anglo-American philosophy, including logical positivism, British ordinary language philosophy, and neopragmatism, as represented by Russell, G.E. Moore, Wittgenstein, Ayer, Quine, Kripke et al.

Prerequisite: one other 100-level philosophy course (Phil 112 and 121 recommended). (Fall)

**193 Phenomenology and Existentialism (3)**

Weiss, Caws

An intensive exploration of the ontological and existential philosophies of Kierkegaard, Bergson, Husserl, Heidegger, Sartre, Merleau-Ponty, de Beauvoir, and Camus. Prerequisite: One other 100-level philosophy course. (Spring)

**195 Topics in Value Theory (3)**

Staff

Variable topics in ethics, political philosophy, aesthetics, and other subfields in normative philosophy. Prerequisite: one 100-level course on related subject matter or permission of the instructor.

**196 Topics in Theory of Knowledge (3)**

Staff

Variable topics in epistemology, philosophy of science and mathematics, philosophy of mind, and similar subfields. Prerequisite: one 100-level course on related subject matter or permission of the instructor.

198 **Proseminar** (3)

Staff

Variable topics; preparation and presentation of a major research paper. Open only to philosophy majors in the senior year as approved by major advisor. (Fall and spring)

199 **Readings and Research** (1 to 3)

Staff

(Fall and spring)

**PHYSICS**

*Professors* D.R. Lehman, B.L. Berman (*Chair*), L.C. Maximon (*Research*), W.C. Parke, W.J.

Briscoe, M.E. Reeves, I. Strakovsky (*Research*), A. Opper

*Associate Professors* H. Haberzettl, K.S. Dhuga, G. Feldman, R.L. Workman (*Research*), A.

Eskandarian, F.X. Lee, C. Zeng

*Assistant Professors* W. Peng, H. Griesshammer, A. Nijdam (*Research*), A.M. Micherdzinska

(*Research*), G. Wang (*Research*), A. Alexandru (*Research*)

*Professorial Lecturers* J.T. Broach, M.F. Corcoran, P. Butterworth, C. O'Donnell

*Bachelor of Arts with a major in physics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11 or BiSc 12; one approved 100-level math course.
4. Required courses in the major—Phys 151 or 152, 161, 164, 165, 167, and two approved 100-level physics electives (Phys 195 is recommended).



*Bachelor of Science with a major in physics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11 or BiSc 12; one approved course in computer programming and two approved 100-level math courses.
4. Required courses in the major—Phys 151 or 152, 161, 164, 165, 167, 195 or 196 or 197, and two approved 100-level physics electives.

*Bachelor of Science with a major in biophysics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Phys 21, 22, 23; Math 31, 32, 33.
3. Required courses in related areas—Chem 11–12, 151–52; BiSc 11, 12, 109, and either 103 or another approved 100-level BiSc course; Stat 127; one approved computer programming course.
4. Required courses in the major—Phys 127, 128, 151 or 152, 161, 164, 165, 195 or 196 or 197.

*Special Honors*—To graduate with Special Honors, a student must meet the eligibility requirements stated under the University Regulations and submit for departmental approval an honors thesis based on a two-semester research project. In addition, the student must have a cumulative grade-point average of at least 3.5 in physics courses and 3.0 overall.

*Minor in physics*—Required: Phys 21, 22, 23, plus two approved 100-level physics courses.

*Minor in biophysics*—Required: Phys 21, 22, 23, 127, 128.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

## **ASTRONOMY**

### **1 Stars, Planets, and Life in the Universe (3)**

Dhuga, Parke, Briscoe

Primarily for non-science majors. An introduction to how our Universe is structured, including the basic principles underlying astronomical systems and observations.

Topics include the known laws of nature, stars, and planetary systems and the conditions for extraterrestrial life and exploration. Prerequisite: high school algebra.

Laboratory fee. (Fall and spring)

### **2 Origins of the Cosmos (3)**

Dhuga, Parke, Briscoe

Primarily for non-science majors. A description of the Universe, its origins and its evolution, based on known physical principles. Topics include galactic and stellar structure, black holes, origin of the elements, and big bang cosmology. Prerequisite: high school algebra. Laboratory fee. (Fall and spring)

### **161 Space Astrophysics (3)**

Corcoran, Parke, Dhuga

Physical processes of celestial phenomena as determined from space-based instrumentation. While the entire electromagnetic spectrum is covered, the high-energy (X-ray and gamma ray) region is emphasized. Results from ground-based instrumentation (e.g., radio and optical) may be introduced. Prerequisite: Phys 22 or equivalent.

### **183 General Relativity (3)**

Parke

A presentation of Einstein's general theory of relativity. Topics include the special theory of relativity, the nature of space and time, the equivalence principle,

Riemannian geometry, Einstein's proposal, tests of the theory, Schwarzschild and Kerr solutions, Hawking radiation, and cosmological models. Prerequisite: Phys 23; Math 33.

**195 Undergraduate Research in Astrophysics (3)**

Staff

Research on problems in astrophysics approved by the faculty. May be repeated once for credit.

**PHYSICS**

**5 How Things Work (4)**

Feldman

Primarily for non-science majors. Physical principles are introduced through a study of everyday objects to see what makes them tick. This unconventional approach is primarily conceptual in nature and intended for students seeking a connection between science and the world in which they live. Prerequisite: high school algebra and trigonometry. Laboratory fee. (Spring)

**7 Music and Physics (4)**

Berman

Primarily for non-science majors. A comparative study of music and physics, showing parallels in the history of the two fields and emphasizing those topics in physics related to the theory of music and the production of sound by musical instruments, particularly classical mechanics and wave motion. Prerequisite: high school algebra and geometry. Laboratory fee. (Fall)

**8 Origin and Evolution of Ideas in Physics (4)**

Staff

Primarily for non-science majors. The evolution of ideas and their historical continuity in the search for basic physical theories. By presenting the world-views of great

physicists of the past, the division of physics into many subdisciplines is avoided and a humanistic approach is achieved. Prerequisite: high school algebra. Laboratory fee.

**11 General Physics I (4)** Feldman

Classical physics. Mechanics, including Newton's laws of motion, force, gravitation, equilibrium, work and energy, momentum, and rotational motion; periodic motion, waves, and sound; heat and thermodynamics. Prerequisite: high school trigonometry. Laboratory fee. (Fall and spring)

**12 General Physics II (4)** Feldman

Classical and modern physics. Electrostatics, electromagnetism, direct and alternating current circuits, and electromagnetic radiation; geometrical and physical optics; special relativity; quantum theory; atomic physics; nuclear physics; particle physics; astrophysics and cosmology. Prerequisite: Phys 11. Laboratory fee. (Fall and spring)

**21 University Physics I (4)** Berman, Feldman, Peng

Classical mechanics and thermodynamics using calculus. Newtonian mechanics: force, momentum, work and energy, mechanical equilibrium, linear, and rotational motion. Gravitation and fields. Atoms, physical properties of matter. Energy transfer and waves, sound. Prerequisite: Math 31; corequisite: Math 32. Laboratory fee. (Fall and spring)

**22 University Physics II (4)** Lee, Oppen, Feldman

Periodic motion, waves, and classical electromagnetism using calculus. Waves and sound. Electrostatics, Gauss's law, capacitance. Electric resistance, electric current. Magnetism. Electrodynamics and electromagnetic induction. Maxwell's theory and

electromagnetic radiation. Geometric and physical optics. Prerequisite: Phys 21.

Laboratory fee. (Fall and spring)

**23 University Physics III (3)**

Reeves, Feldman, Lee

Modern physics using calculus. Relativity. Wave–particle duality, quantum mechanics.

The hydrogen atom, Pauli principle. Quantum statistics and radiation. Quantum theory of the condensed state, superconductivity. Nuclear physics. Applications to

astrophysics and nucleosynthesis. General relativity. The big bang theory. Prerequisite:

Phys 22; corequisite: Math 33. (Fall)

**127 Biophysics: Macroscopic Physics in the Life Sciences (3)**

Parke

Physical principles applied to biological systems and medicine, and current instrumentation and technology. Topics include blood flow, ultrasonics, spectroscopy,

radiation biology, bioenergetics, ordering theory, and neural networks. Prerequisite:

Phys 12 or 22; Math 32. (Fall)

**128 Biophysics: Microscopic Physics in the Life Sciences (3)**

Zeng, Parke

Physical principles applied to biological systems on the nanometer scale. Topics

include intermolecular forces, statistical principles applied to biological microstates,

determining protein and nucleic acid structures, operation of protein motors and

transport systems, together with nanotechnology and instrumentation. Prerequisite:

Phys 12 or 22; Math 33. (Spring)

**151 Intermediate Laboratory I: Techniques and Methods (3)**

Strakovsky

Experiments in electromagnetism, classical and quantum mechanics, atomic and

nuclear physics with emphasis on experimental methods. Laboratory fee.

(Fall and spring)

**152 Intermediate Laboratory II: Instrumentation (3)** Staff

Elementary electric and electronic analog and digital circuits. Topics include passive and active components in DC and AC circuits and operational amplifiers, with emphasis on measurement techniques. Laboratory fee. (Spring)

**161 Mechanics (3)** Parke, Workman

Mechanics of mass points and rigid bodies. Newton's laws, conservation laws, Euler's equations, inertia tensor, small vibrations, and elements of Lagrange's and Hamilton's equations. Prerequisite: Phys 23; Math 33. (Spring)

**163 Physical and Quantum Optics (4)** Staff

Wave motion, electromagnetic aspects of light, dispersion of light in media, geometrical optics, polarization and optical properties of crystals, interference, diffraction, lasers, holography. Mathematical tools, including Fourier methods, developed as needed. The quantum description of light complements the classical description. Prerequisite: Phys 23; Math 33. Laboratory fee.

**164 Thermal and Statistical Physics (3)** Zeng, Peng

Principles and application of thermodynamics to reversible and irreversible processes, with derivation from statistical postulates applied to the microscopic behavior of large systems at or near equilibrium. Topics include equilibrium thermodynamics, statistical mechanics, and kinetic theory of gases. Prerequisite: Phys 23; Math 33. (Spring)

**165 Electromagnetic Theory I (3)** Staff

Electrostatics and magnetostatics, electric and magnetic fields in matter, scalar and vector potentials, electromagnetic induction. Maxwell's equations. The methods of

vector and tensor calculus are developed as needed, as are the method of images, Fourier series, and some computational methods. Prerequisite: Phys 23; Math 33.  
(Fall)

**166 Electromagnetic Theory II (3)** Staff

Conservation laws, electromagnetic waves, radiation, relativistic formulation of electrodynamics and potential fields. Prerequisite: Phys 165. (Spring)

**167 Principles of Quantum Physics (3)** Reeves, Workman

The conceptual framework and mathematical formalism of quantum mechanics. Wave-particle duality, wave functions, and eigenvalues. Schrödinger Equation and one-dimensional potential problems. Angular momentum, central potentials, and the hydrogen atom. Identical particles and spin. Scattering theory. Perturbation theory. Prerequisite: Phys 23; Math 33. (Fall)

**170 Solid-State Physics (3)** Reeves, Zeng

Structure of solids, lattices and lattice defects, deformation, vibrational and electronic contribution to specific heats, binding energies, electronic states in metals and semiconductors, magnetic properties of solids, superconductivity. Prerequisite: Phys 167 or permission of instructor. (Spring)

**175 Nuclear Physics (3)** Berman, Briscoe, Workman

Application of quantum physics to the description of nuclei and their interactions. Properties of nuclei, nuclear models, nuclear forces, and nuclear reactions are considered. Specific topics include the deuteron, n-p scattering, the optical model, the shell model, the liquid-drop model, beta decay, fission, and fusion. Prerequisite: Phys 167 or permission of instructor. (Spring)

**181 Computational Physics (3)** Eskandarian, Lee

Topics include celestial mechanics, chaotic systems, fluid dynamics, and other such complex systems that require a computational approach. Prerequisite: Math 33; at least one 100-level physics course; working knowledge of C, FORTRAN, or Java.

Laboratory fee.

**190 Special Topics in Physics (3)** Staff

Courses offered by visiting faculty or other experimental offerings. Topics announced on a semester basis. May be repeated for credit provided the topic differs.

**192 Independent Study in Physics (1 to 3)** Staff

Independent readings or directed study under the supervision of a faculty member.

Credit varies, depending upon the nature of the work. May be repeated once for credit.

**195 Undergraduate Research (3)** Staff

Research on problems in physics approved by the faculty. May be repeated once for credit.

**196 Undergraduate Research in Biophysics (3)** Staff

Research on problems in biophysics approved by the faculty. May be repeated once for credit.

**197 Undergraduate Research in Nuclear Physics (3)** Staff

Research on problems in nuclear physics approved by the faculty. May be repeated once for credit.

**POLITICAL COMMUNICATION**

See **Media and Public Affairs**.

**POLITICAL SCIENCE**



*University Professor* J.N. Rosenau

*Professors* B. Reich, H.R. Nau, J.B. Manheim, C. McClintock, M.J. Sodaro, S.L. Wolchik, D.

Shambaugh, C.J. Deering, H.B. Feigenbaum, N.J. Brown, H.L. Wolman, F. Maltzman

(*Chair*), M. Finnemore, J. Goldgeier, S.K. Sell, B. Dickson, P. Wahlbeck, S. Binder, M.E.

Brown, J.H. Lebovic, C. Glaser

*Associate Professors* R.P. Stoker, A. Bowie, M.M. Mochizuki, S.J. Balla, S. Wiley, I. Creppell,

M. Lynch, K.J. Morgan, H.E. Hale, H. Farrell

*Assistant Professors* W.J. Winstead, C. Rector, S. Kelts, E.D. Lawrence, G.S. Lambright, J.M.

Sides, E.J. Teitelbaum, D.K. Park, R.F. Adcock, E. Saunders, J.K. Jung, L.A. Fujii, H.

Schmidt, L. Hughes, C. Mylonas, B. Bartels

*Bachelor of Arts with a major in political science*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite: PSc 1, 2, and 3 (or the equivalent). Six courses in the social sciences, other than political science, including at least two history or two economics courses. (In addition to the CCAS General Curriculum Requirements list of courses in social and behavioral sciences, courses in history, peace studies, and women's studies are considered social sciences for this requirement.) Twelve credit hours of introductory foreign language and statistics are strongly recommended.
3. Required courses in the major: 30 credit hours of 100-level political science courses, including a distribution requirement that consists of 3 credit hours from each of the following groups: Group A (comparative politics)—PSc 130, 131, 134, 136, 137, 166, 167, 169, 170, 171, 173, 174, 177, 179, 181, 183; Group B (American government and politics)—PSc 111, 112, 113,

114, 115, 116, 117, 118, 119, 120, 121, 122, 124, 125, 128, 129; Group C (international politics, law, and organizations)—PSc 139, 140, 142, 144, 146, 149, 161, 168, 175, 176, 178, 182, 184; Group D (methodology)—PSc 101, 104; Group E (political thought)—PSc 105, 106, 107, 108, 110.

No more than 3 hours of PSc 187 Internship may be credited toward the major; this course does not satisfy the distribution requirement. Specific group credit for offerings of PSc 190 Selected Topics is determined by the undergraduate advisor.

Every major must complete PSc 192 Proseminar (which counts toward the 30-hour requirement but does not satisfy group distribution requirements) in the junior or senior year. A 200-level course may be substituted for the proseminar requirement with the written permission of the instructor and the undergraduate coordinator.

*Bachelor of Arts with a major in political science (public policy focus)*—Requirements are the same as for the B.A. with a major in political science with the required 30 credit hours of 100-level courses in political science distributed as follows: PSc 104; 9 credit hours in policy-oriented courses to be selected from PSc 112, 117, 122, 124, 146; one policy-oriented proseminar; 3 credit hours from each of Groups A, B, C, and E; and 3 credit hours in a political science elective at the 100 level.

*Combined bachelor's/master's dual degree programs*—Four master's programs can be undertaken in combination with the Bachelor of Arts with a major in political science. Departmental majors should consult the undergraduate program advisor at the beginning of the junior year (after completing 60 credit hours at GW) for the combined degree programs that lead to the Master of Professional Studies in the field of legislative affairs, the Master of Public Policy, and the Master of Public Administration (the M.P.P. is available only to majors in the

public policy focus). For the combined degree program leading to the Master of Arts in the field of political science, students should consult the undergraduate program advisor as soon as possible in order to select courses appropriately; the program is available only to students who qualify for Special Honors.

*Special Honors*—Students may apply for graduation with Special Honors. To qualify, a student must fulfill the general requirements stated under University Regulations and have a GPA in the major of 3.5 or higher. Those with a GPA in the major of 3.8 and higher will then be recommended for Special Honors. Those with a GPA in the major between 3.5 and 3.7 must complete an independent research project, usually done in PSc 192, that has been approved as meriting Special Honors by two members of the Political Science faculty.

*Minor in political science*—Required: PSc 1, 2, and 3 (or the equivalent) plus 12 credit hours of 100-level political science courses, including one course each from Groups D and E. A minimum of 9 credit hours of other social science courses is also required.

With permission of the instructor and the undergraduate coordinator, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Departmental prerequisite:** PSc 1 is prerequisite to Group A courses (comparative politics), PSc 2 is prerequisite to Group B courses (American government and politics), and PSc 3 is prerequisite to Group C courses (international politics, law, and organizations). Courses are defined by their group under item 3, above. Honors course equivalents are acceptable substitutes. Students who have taken PSc 11–12 have fulfilled prerequisites to all three groups. Elliott School students substitute IAff 5 for PSc 3 as a prerequisite to Group C courses. Qualified juniors and seniors who are not political science majors and who wish to take 100-level PSc

courses without having the appropriate prerequisites may do so only with the written permission of the instructor.

**1 Introduction to Comparative Politics (3)**

Sodaro, Dickson,

Morgan, Teitelbaum

Concepts and principles of comparative analysis, with an examination of politics and government in selected countries.

**2 Introduction to American Politics  
and Government (3)**

Sigelman, Maltzman, Deering, Sides

Structure, powers, and processes of the American political system and the impact on public policy.

**3 Introduction to International Politics (3)**

Goldgeier, Nau, Rector

Analysis of world politics, focusing on the role of nation-states and international organizations and on selected foreign policy issues.

**11-12 Politics and Values (6-6)**

Kelts

Role of personal and social values in politics. Fall: Problems in the Western (especially American) tradition of political science. Spring: Thinking outside the Western state: culture, nationalism, ethnic conflict, democratization, international conflict. Admission by special selection process.

**101 Scope and Methods**

Lebovic, Wahlbeck, Wiley, Lawrence, Bartels

**of Political Science (3)**

Nature of political inquiry, approaches to the study of politics and government, empirical methods of research. Laboratory fee.

**104 Methods of Public Policy Analysis (3)**

Stoker, Balla

Introductory overview of the concepts, issues, and techniques of systematic policy analysis and its role in the policy process.

105–6 **Major Issues of Western Political Thought** (3–3) Creppell, Kelts, Adcock

PSc 105: foundations of Western political thought—Plato to Aquinas. PSc 106: history of political thought from the 16th through the late 19th century, as set forth in the works of representative thinkers.

107 **20th-Century Political Thought** (3) Creppell, Winstead

Recent Western political thought; analysis and critique of the legacies of modern political theories and ideologies.

108 **Freedom and Equality** (3) Kelts

Case analysis of major ideas related to freedom and equality in the Western political tradition.

110 **American Political Thought** (3) Staff

Political thought in the U.S. from colonial times to the present as seen through major representative writings.

111 **State and Urban Politics** (3) Wolman

Comparative analysis of context, institutions, processes, and policies of state and urban political systems.

112 **State and Urban Policy Problems** (3) Wolman

Selected issues in state and urban policymaking, with emphasis on urban and metropolitan settings.

113 **Judicial Politics** (3) Wahlbeck

An examination of judicial process and behavior. Emphasis on judicial selection, decision making, interaction with the political environment, and impact and implementation of decisions.

**114–15 U.S. Constitutional Law and Politics (3–3)**

Wahlbeck, Bartels

PSc 114: Separation of powers, federal–state relationships, economic regulation. PSc

115: Political and civil rights.

**116 The American Presidency (3)**

Maltzman, Lawrence

Examination of the politics of presidential selection, the authority of the contemporary institution, the mechanisms and processes for formulating public policy, and the influences of personality on performance in office.

**117 Executive Branch Politics (3)**

Balla

Basic concepts in public administration; influence of bureaucratic politics on policy formulation and implementation. Same as PAd 117.

**118 Legislative Politics (3)**

Deering, Maltzman, Binder

Theory, structure, and process of the U.S. Congress, with emphasis on elections, party organization, committees, and floor procedure, in the context of executive–legislative relations and interest-group activities.

**119 Political Parties and Interest Groups (3)**

Binder

Role of parties as a linkage between mass preferences and government policies.

Organization, nominations, voting, and activities in legislative and executive branches.

**120 Public Opinion (3)**

Sides

How public opinion is measured, how it is shaped, and its consequences for policymaking.

- 121 **U.S. Political Participation (3)** Park  
Examination of the various forms of American political participation in electoral and governmental politics and their effects on the political process.
- 122 **Science, Technology, and Politics (3)** Rycroft  
Multiple impacts of scientific and technological developments on the political systems.  
Discussion of public policies for support, use, and control of science and technology.
- 124 **Issues in Domestic Public Policy (3)** Stoker, Balla  
Examination of the decision-making process and the substance of various issues in domestic public policy in such areas as crime, economics, education, energy, the environment, poverty, and health.
- 125 **Women and Politics (3)** Morgan  
An examination of the role and impact of women in politics, including women's interests and access to the political system; specific public policy issues with a particular focus on the role of women.
- 128 **Media, Politics, and Government (3)** Staff  
Same as SMPA 128.
- 129 **Media and Politics (3)** Sides  
The impact of the media on American politics, including the nature of coverage of political issues and campaigns, dynamics of selecting and presenting news stories, and consequences of media messages for public opinion and action.
- 130 **Comparative Politics of Western Europe (3)** Feigenbaum

Comparative political analysis with primary focus on the principal states of Western Europe.

131 **Comparative Politics of Central and Eastern Europe (3)** Wolchik

Specific countries vary, to include nations of central and Eastern Europe and/or the newly independent states.

134 **Global Perspectives on Democracy (3)** Brown, Dickson

International experiences with the historical evolution and current nature of democratic political systems.

136 **State–Society Relations in the Developing World (3)** Bowie

Historically informed exploration of enduring issues of concern in state–society relations, with an empirical focus on selected countries and regions of the developing world.

137 **Development Politics (3)** Lambright

An examination of how and why political systems develop the way they do. Why do some countries develop into democracies, while others become authoritarian? How do class conflict, the nature of the elite, and the political culture affect the development of political institutions?

139 **International Political Economy (3)** Sell

Analysis of the political aspects of global economic relationships, focusing on such issues as economic hegemony, interdependence, trade relations, development assistance, multinational corporations, and the role of international organizations.

140 **Theories of International Politics (3)** Nau, Lebovic, Goldgeier, Lynch



Exploration of alternative theoretical approaches to understanding world politics in its historical and contemporary dimensions.

142 **International Organizations** (3) Finnemore, Rector

Development and operations of international organizations working in the areas of collective security, peacekeeping, trade, finance, environment, human rights.

144 **Public International Law** (3) Staff

Survey of essential principles and concepts of public international law through case analysis and with reference to political factors.

146 **U.S. Foreign Policy** (3) Goldgeier, Saunders

Constitutional, political, and international factors that determine the formulation, execution, and substance of U.S. foreign policy.

149 **International Security Politics** (3) Schmidt, Glaser

Overview of international security issues. Insights from a variety of historical periods and theoretical approaches inform the analysis.

161 **European–Atlantic Relations** (3) Rector

International politics of the North Atlantic area, the European Union, and U.S.–European relations.

166 **Government and Politics of Russia** (3) Hale

An examination of political institutions, processes, and issues of Russian politics.

167 **Human Rights** (3) Staff

Human rights theory, the various movements for human, religious, civil, political, and other rights.

168 **Post-Soviet Foreign Policy** (3) Staff

External problems and policies of Russia and the other successor states of the former USSR (especially the Baltics, Ukraine, and southern rim of the former Soviet Union).

**169 Comparative Politics of South Asia (3)** Teitelbaum

A comparative examination of colonialism, economic development, and identity politics in South Asia.

**170 Comparative Politics of China and Northeast Asia (3)** Dickson

Political institutions and processes of China (including Taiwan), Japan, and Korea since World War II. Influence of indigenous traditions and foreign contacts.

**171 Politics and Foreign Policy of China (3)** Shambaugh

An examination of political institutions, processes, and issues of Chinese politics and foreign policy.

**173 Comparative Politics of Southeast Asia (3)** Bowie

Political forces, processes, and outcomes, using empirical examples from Southeast Asia.

**174 Politics and Foreign Policy of Japan (3)** Mochizuki, Hughes

An examination of political institutions, processes, and issues of Japanese politics and foreign policy.

**175 International Relations of East Asia (3)** Mochizuki, Shambaugh, Hughes

Analysis of the foreign policies of selected East Asian countries and the foreign policies of major powers toward the region.

**176 The Arab–Israeli Conflict (3)** Reich

Origins, evolution, and issues of the Arab–Israeli conflict.

**177 Comparative Politics of the Middle East (3)** Reich, Brown

- Politics of the eastern Arab states, Turkey, Iran, and Israel.
- 178 **International Relations of the Middle East** (3) Reich, Brown, Lynch  
Analysis of the regional and international relations of the Middle East.
- 179 **Politics and Foreign Policy of Israel** (3) Reich  
Examination of the institutions, processes, and issues of Israeli politics and foreign policy.
- 181 **Comparative Politics of Middle and Southern Africa** (3) Lambright  
Comparative analysis of political systems in selected countries of non-Mediterranean Africa.
- 182 **African International Politics** (3) Lambright  
Analysis of interstate relations in Africa and of selected aspects of African relations with the outside world. Recommended prerequisite: PSc 181.
- 183 **Comparative Politics of Latin America** (3) McClintock  
The politics of selected countries in South America, Central America, and the Caribbean. Emphasis on revolutionary movements and democratization.
- 184 **International Relations of Latin America** (3) McClintock  
Emphasis on U.S. foreign policy toward Latin America.
- 187 **Internship** (1 to 3) Wiley  
Study of political behavior and institutions through internship experience. Open to departmental majors only. Admission requires departmental approval and junior standing.
- 190 **Selected Topics** (3) Staff
- 191 **Independent Study** (1 to 3) Staff

For departmental majors. Prerequisite: senior standing, 15 credit hours of 100-level political science courses, and approval of the undergraduate program advisor and the faculty member who will direct the study.

192 **Proseminar** (3)

Staff

Examination of selected problems in political science. Admission restricted to political science majors in their junior or senior year. May be repeated once for credit.

**PORTUGUESE**

See **Romance, German, and Slavic Languages and Literatures.**

**PSYCHOLOGY**

*Professors* E. Abravanel, L.A. Rothblat, R.A. Peterson, P. Wirtz, C.K. Sigelman, L.R.

Offermann, P.J. Poppen (*Chair*), E. Hirshman (*Research*), M.C. Zea, P. Barratt, G. Howe

*Associate Professors* L. Brandt, C.A. Rohrbeck, S. Dopkins, S.D. Molock, J.M. Ganiban, D.P.

Costanza, E. Davis, P.J. Moore, J.W. Philbeck, C. Gee, H.N. Le, A.N. Zucker

*Assistant Professors* C. Beil (*Research*), D.E. Schell, S. Lambert, M.H. Sohn, M. Stock, S.

Shomstein

*Adjunct Professor* K. Ross-Kidder

*Lecturers* P.J. Woodruff, J. Vajda

*Bachelor of Arts with a major in psychology*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Psyc 1.
3. Required courses in related areas:

(a) Stat 53 or equivalent. Students are encouraged to take a second statistics course to meet the general curriculum requirement in quantitative and/or logical reasoning.

(b) 6 credit hours from one of the following departments: Anthropology, Economics, History, Political Science, or Sociology; an additional 3 credit hours from a different one of these departments or from American Studies, Geography, or Philosophy.

4. Required courses in the major—three survey courses (two chosen from Psyc 11, 12, 13 and one from Psyc 14, 15); Psyc 101 and 106; one course designated as cognitive/biological and two courses designated as social/developmental/clinical (lists of designated courses are available at [www.gwu.edu/~psycdept](http://www.gwu.edu/~psycdept)); and three additional courses at the 100 level or above. If a grade lower than C– is received for Psyc 101 or 106, the course must be repeated; credit for the repetition will not count toward degree requirements. Only 3 credits of Psyc 191 can be applied toward the major.

*Special Honors*—To qualify for graduation with Special Honors the student must fulfill the general requirements stated under University Regulations, submit an application to the Psychology Department before the beginning of the student's senior year, take an honors seminar (Psyc 197) and a 200-level seminar, and complete an independent study project (Psyc 191 or 198) with distinction. The grade-point average in psychology required for graduation with Special Honors is 3.5.

*Combined Bachelor of Arts with a major in psychology/Master of Arts in the field of art therapy*—Students interested in this dual degree program should consult the director of the Art Therapy Program early in the junior year.

*Minor in psychology*—18 credit hours are required, including Psyc 1; three survey courses (two chosen from Psyc 11, 12, 13 and one from Psyc 14, 15); and at least two additional psychology courses other than Psyc 191 or 198. Students considering graduate study in

psychology are advised to take Psyc 106, a distribution of courses from the categories listed under the major above, Psyc 196, and an elementary course in statistics.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Departmental prerequisite:** Psyc 1 is prerequisite to all psychology courses.

**1 General Psychology (3)** Staff

Fundamental principles underlying human behavior. (Fall and spring)

**11 Abnormal Psychology (3)** Rohrbeck, Woodruff, Le, Schell, Molock

Causes, diagnosis, treatment, and theories of various types of maladjustments and mental disorders. (Fall and spring)

**12 Social Psychology (3)** Moore, Stock

Social foundations of behavior: cognition, motivation, role behavior, communication, small-group processes, and attitudes. (Fall and spring)

**13 Developmental Psychology (3)** Ganiban, Abravanel, Schell

Introduction to the study of human development; theory and research concerning changes in physical, cognitive, and social functioning and influences on the developing individual. (Fall and spring)

**14 Cognitive Psychology (3)** Philbeck

Introduction to the study of cognition; review of data and theories on the topics of perception, attention, memory, language, reasoning, and decision making.

**15 Biological Psychology (3)** Staff

Introduction to the biological basis of behavior; review of data and empirical methods on the topics of neural structure and function, brain damage, neuro-anatomy, genes, hormones and their influence on behavior.

101 **Psychology Research Methods** (3) Rohrbeck, Moore, Zucker

Survey of research designs (e.g., case studies, correlational designs, experiments), methods (e.g., questionnaires, observations), and measurement issues (e.g., reliability and validity). Prerequisite or corequisite: Stat 53. (Fall and spring)

106 **Principles and Methods of Psychology** (4) Dopkins, Philbeck

Lecture (3 hours), laboratory (3 hours). An experimental approach to understanding behavior; individual and class experiments performed. Psyc 105: visual sensation and perception. Psyc 106: sensation and perception in all modalities. Laboratory fee per semester. (Fall and spring)

108 **Humanistic Psychology** (3) Schell

Critical examination of humanistic psychology. Emphasis on role of consciousness in human behavior. Philosophic foundations, existential, phenomenological, and transpersonal psychology. (Fall)

109 **The Psychological Study of Spirituality** (3) Schell

The complex interrelationship between psychology and spirituality: health and wellness; development of a spiritual life; psychological factors involved in spirituality; therapy and multicultural issues. Same as Rel 102. (Spring)

110 **Perception and Understanding in Children** (3) Abravanel

Concepts and research in the area of developmental psychology; emphasis on the growth and development of thinking, perceiving, and symbolic activity. (Spring)

**112 Psychology of Adolescence (3)**

Ross-Kidder

Psychological characteristics and problems peculiar to adolescence, with emphasis on application of psychology to solution of such problems. Prerequisite: Psyc 13.

(Fall or spring)

**114 Adult Development and Aging (3)**

Staff

Psychological aging and development during the adult years, with an emphasis on theories of adult development and research on changes in cognitive functioning and social adjustment in early, middle, and later adulthood. Prerequisite: Psyc 13.

**115 Developmental Psychopathology (3)**

Ganiban

The origins of child psychopathology, including developmental perspectives and the potential contributions of child-, family-, and community-based characteristics to the emergence of psychopathology. The development of specific childhood disorders.

**118 Neuropsychology (3)**

Rothblat

Analysis of neural processes underlying behavior. Basic structure and functions of the nervous system, with emphasis on sensory processes, learning and memory, motivation, and emotion. (Fall and spring)

**119 Group Dynamics (3)**

Staff

Relationship of the individual to groups, collectivities, and larger social systems. Theory, research, and applications of group and organizational processes. (Fall and spring)

**121 Memory and Cognition (3)**

Philbeck, Sohn

An examination of the psychological processes underlying human memory and cognition. Topics cover theoretical and experimental issues involving a range of



cognitive function from attention and pattern recognition to learning and memory. (Fall and spring)

**122 Cognitive Neuroscience (3)**

Shomstein

How the structure and functions of the brain are related to cognitive processes and their associated behaviors. The biological bases of behavior and mental activity. Research and case studies by cognitive psychologists, neuroscientists, psychiatrists, and linguists, focusing on how the brain affects pattern recognition, attention, short-term and long-term memory processes, and language.

**124 Visual Perception (3)**

Philbeck

An overview of human perception, ranging from the detection of simple stimuli to the identification of objects and events. Perceptions of color, motion, and spatial layout. Research methodology, biological foundations, and theoretical issues.

**125 Cross-Cultural Psychology (3)**

Staff

Introduction to the theory, methods, and research of cross-cultural psychology, with emphasis on immigrants and ethnic minorities in the United States and on other cultures. Prerequisite: Psyc 12 or 13. (Spring)

**128 Health Psychology (3)**

Peterson, Moore

Current research in the area of health psychology, with special attention to psychological factors related to health and illness, psychological intervention with medical patients, and psychological approaches to illness prevention and health promotion. (Fall and spring)

**129 Theories of Personality (3)**

Staff

- Survey of personality theories; emphasis on their application to problems of individuals. (Fall and spring)
- 131 **Psychological Tests** (3) Staff
- Survey of psychological tests and their more common uses in business, industry, government, law, medicine, and education. Material fee. (Fall and spring)
- 132 **Socialization in Childhood** (3) Ross-Kidder
- Examination of primary methods by which the child is shaped in terms of social judgment and self-control; internalization of controls, assimilation of societal values and parenting procedures. Organized by focus on issues according to developmental level.
- 144 **Industrial/Organizational Psychology** (3) Offermann
- Psychological concepts and methods applied to problems of personnel management, employee motivation and productivity, supervisory leadership, and organizational development. (Fall and spring)
- 150 **Psychology of Sex Differences** (3) Poppen
- Relevant biological, psychological, and sociological influences on males and females in the development of sex differences; hormonal differences, gender identity, differential socialization of sons and daughters, masculinity/femininity, cultural evaluation of male and female roles. Survey of relevant psychological theory. Emphasis on empirical research and hypothesis testing. (Spring)
- 151 **Theory and Practice of Women's Leadership** (3) Offermann
- Same as WLP 151.
- 152 **Women and Psychology** (3) Zucker

The psychology of women from a variety of perspectives (e.g., biological, cultural, social constructivist). Ways in which mainstream psychology is gendered; various feminist approaches to studying issues of gender in psychology. Same as WStu 152.  
(Fall)

**153 Social Psychology of Learning and Motivation (3)** Staff

Classic and contemporary theories describing the effect of social influence on motivation and learning, with application to achievement settings.

**154 Psychology of Crime and Violence (3)** Staff

Examination of many psychological aspects of criminal behavior; personality of criminals and of psychological processes affecting behavior. (Fall and spring)

**156 Psychology of Attitudes and Public Opinion (3)** Poppen

Psychology of opinion formation, measurement of opinion, social determinants of attitudes, psychological processes in propaganda, bases of receptivity to propaganda, psychological warfare.

**170 Clinical Psychology (3)** Rohrbeck, Gee

An exploration of the history, functions, and concerns of the clinical psychologist.  
Assessment, treatment, community approaches, ethics. Prerequisite: Psyc 11.

**172 Psychopathology and the Media (3)** Le

How abnormal behaviors and mental disorders are portrayed in film and the media, including analysis of the accuracy of these portrayals, focusing on symptomatology, etiology, and treatment of adult psychopathology.

**173 Community Psychology (3)** Lambert

The origins and current practice of community psychology, and comparison of community psychological approaches with traditional clinical perspectives. The role of psychology in addressing social issues facing communities; methods for research and intervention targeting communities.

**188 Attitudes Toward Death and Dying (3)** Woodruff

Exploration of the many different aspects, attitudes, and experiences associated with the process of death and dying. (Fall and spring)

**191 Independent Research (1 to 3)** Staff

Open to qualified students by permission; arrangements must be made with the sponsoring faculty member prior to registration. A list of participating faculty members and their research specialties is available from the Department. May be repeated three times for credit. Prerequisite: Psyc 101.

**192 Field Experience (3)** Abravanel

Senior psychology majors spend a minimum of six hours a week in a local mental health, rehabilitation, school, or community setting. Students must have weekly blocks of time available. (Fall and spring)

**193 Seminar in Industrial/Organizational Psychology (3)** Offermann

Selected specialized topics in the field of psychology and work behavior, such as human ability and personality, decisions and risk behavior, organizational change, and leadership. May be repeated for credit. Prerequisite: Psyc 144 or permission of instructor.

**196 History and Systems of Psychology (3)** Staff

A survey and integration of the major viewpoints and concepts of psychology.

Recommended for students planning graduate study. (Fall and spring)

197 **Honors Seminar** (3) Staff

Selected topics in psychology that change each semester. Intended primarily for students in the Special Honors program in psychology. May be repeated once for credit. Prerequisite: Psyc 101. (Fall and spring)

198 **Current Research Issues** (3) Staff

Conducted as a seminar. Recent experiments in psychology, including those performed by members of the class; emphasis on student participation. May be repeated once for credit. Prerequisite: Psyc 101.

199 **Current Topics in Psychology** (3) Staff

Topics vary. May be repeated for credit provided the topic differs.

## **PUBLIC ADMINISTRATION**

Programs in public administration are offered at the graduate level by the Trachtenberg School of Public Policy and Public Administration in Columbian College of Arts and Sciences.

The course listed here is open to undergraduates.

117 **Executive Branch Politics** (3) Staff

Contemporary concepts and issues in public administration and management. Major trends and approaches to governmental administration in the U.S., including the changing federal role, roles of the public sector in relation to the private sector, and managing public agencies at all levels. Same as PSc 117. (Fall and spring)

## **PUBLIC HEALTH**

**Undergraduate Program Committee:** S. Wilensky (*Director*), C. Battle, R. Burke, J.

Catalanotti, J. Cawley, M. Edberg, C. Monforton, R. Riegelman, W. Schroth, R. Skolnik, J.

Teitelbaum

See the School of Public Health and Health Services for the program of study leading to the Bachelor of Science with a major in public health. The following courses are also available to undergraduates in other schools and may be used toward a secondary field in public health.

Check with the SPHHS Student Services Office for any prerequisites that may apply.

**101 Introduction to Public Health and Health Services (3)**

Introduction to aspects of public health and health services, including health services administration and policy, maternal and child health, environmental health, and health promotion.

**102 Public Health Biology (3)**

Basic scientific mechanisms, concepts, and principles in health and the pathogenesis of diseases; a foundation for applications to public health. Prerequisite: BiSc 5 or 11.

**103 Introduction to Preventive Medicine (3)**

Introduction to the clinical science basis of preventive medicine, including nutrition, infectious diseases, immunology, and human growth and development. Overview of the goals and methods used for disease prevention.

**105 Plagues and People: A History of Public Health and Epidemic Diseases (3)**

Historical and philosophical development of public health and its contributions to understanding, preventing, and controlling disease and disabilities.

**106 Introduction to the Management and Economics of Health Services (3)**

Basics of management theory, finance, and economics as applied to managing in the public health and health services field.

**121 Principles of Health Education and Health Promotion (3)**

Social and behavioral theories underlying health promotion program development and evaluation. Practical applications in a variety of domestic and global public health settings. Prerequisite or corequisite: PubH 101.

**132 Epidemiology: Measuring Health and Disease (3)**

Principles of epidemiology applied to disease surveillance, control of infectious and chronic diseases, and health services/health policy. Understanding the basic research designs and their relationship to establishing cause and effect and effectiveness of interventions to prevent and cure disease. Prerequisite: PubH 101.

**172 Health and Environment (3)**

Introduction to environmental and occupational health and implications for individual and population health. Issues of clean water, environmental toxins, air pollution, and the environmental impact on infectious diseases. Prerequisite or corequisite: PubH 102.

**180 Introduction to Global Health and Development (3)**

Basic concepts of development theory, international health policy, demographic trends, and health promotion; how the relationships between socioeconomic development and global health can be observed, measured, and used for the management of health programs.

**181 Environment, Health, and Development (3)**

Survey of the relationship between health and development and environmental trends. Topics include deforestation, urban contamination, and desertification.

**182 Health, Human Rights, and Displaced Persons (3)**

Concepts of health as a human right, ethics, and the participation of the international community in moving toward health for all. Civil and international conflict in the generation of displaced populations.

**183 Global Delivery of Health Systems (3)**

Introduction to health systems and the basic concepts of health systems administration and financing and health care reform with examples from advanced, middle income, and poor countries.

**184 International Public Health Practice (3)**

Global challenges of new and re-emerging infectious diseases and the health of travelers. Use of health information in the context of globalization and public health practice. International aspects of medical and public health training.

**185 Impact of Culture Upon Health (3)**

Relationships between cultural values and the development of modern health systems based on Western models of health care practice. Reliance upon traditional forms of health care. Examples of successful incorporation of traditional practices into evolving health care systems.

**190 Topics in Public Health (1 to 3)**

Topics announced in the Schedule of Classes. May be repeated for credit provided the topic differs. Various offerings each semester.

**191 Introduction to Health Policy (3)**



An introduction to the fundamentals of the health care system in the United States and strategies available to policymakers when addressing problems relating to access, financing, and delivery of health care. Prerequisite: PubH 101.

**192 Introduction to Health Law (3)**

Legal concepts related to individual health care and public health systems in the United States. Health care law, public health law, and bioethics.

**193 Service-Learning in Public Health (3)**

Prerequisite: PubH 101 and permission of program director.

**195 Senior Seminar (3)**

Limited to public health majors in their senior year. Students develop a public health intervention incorporating various domains of the discipline of public health.

**199 Independent Study (3)**

For departmental majors only. Prerequisite: outline of intended project must be approved prior to registration by instructor and dean's office.

**RELIGION**

*University Professor* S.H. Nasr

*Professors* D.D. Wallace, Jr. (*Chair*), A.J. Hildebeitel, P.B. Duff, R.J. Eisen

*Associate Professor* X. Kang

*Assistant Professors* K. Pemberton, E. Aviv, I. Oh Koukios

*Professorial Lecturers* L.G. Berner, S.M. Glazer, B.N. Hebbbar, E.C. Hostetter

*Bachelor of Arts with a major in religion*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Rel 1, 2.

3. Required courses in the major—30 credit hours, including at least 21 hours of upper-level courses. Twelve of these hours must be chosen from one religious tradition, such as Buddhism, Christianity, Hinduism, Islam, Judaism. Appropriate graduate seminars may be approved as substitutions for advanced-level courses. The program must include Rel 101 and at least one course each in Hebrew Scriptures and in New Testament.

Special Honors are awarded to students who meet the requirements stated under University Regulations, maintain a grade-point average of 3.4 in courses in the major, and complete an honors thesis by enrolling in Rel 191.

It is recommended that students include the study of foreign languages in their undergraduate program, including a language crucial to one of the religious traditions. All students expecting to enter graduate school are urged to study French or German.

*Minor in religion*—Required: a minimum of 18 credit hours in religion, of which at least 6 must be 100-level courses. The minor program will be developed in consultation with the departmental advisor. Rel 101 is strongly recommended for all participating students.

*Minor in peace studies*—Required: 18 credit hours, including PStd 10 and 190 plus at least one course chosen from each of the following three categories (lists of courses that can fulfill each category are available in the Department of Religion): (1) philosophical and religious approaches to peace; (2) international peace and conflict; (3) social, economic, and environmental justice.

With approval of the advisor, Selected Topics courses and 700 Series courses in related subjects may be counted toward the minor. An internship in a relevant agency (through CCAS 154) may also count for 3 hours of credit, with advisor's prior approval.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**1 Introduction to World Religions: West (3)** Staff

Examination of the religions of the ancient Mediterranean and the major religions of the West. Religious foundations of Western civilizations. The development of Judaism, Christianity, and Islam and their confrontations with secularization and political upheaval in the modern world. (Fall and spring)

**2 Introduction to World Religions: East (3)** Staff

Examination of the major religions of the East and comparison with religions in the West. Approaches to the cross-cultural study of religion. Hinduism, Buddhism, and the religions of Tibet, China, and Japan are studied with respect to their history and their encounter with modernity. (Fall and spring)

**9 Bible: Hebrew Scriptures (3)** Duff

The literature, history, and religious thought represented by the Hebrew Scriptures (Old Testament). Continuities and contrasts between Israel and the ancient Near East are considered through study of the world view, oral and literary tradition, main religious ideas, and chief figures and movements of the biblical literature. (Fall and spring)

**10 Bible: New Testament (3)** Duff

Literature and history of earliest Christianity in the setting of the religious movements of the Greco-Roman world and developments within Judaism. The meaning of the earliest Christian proclamation about the significance of the life, teaching, and death of

Jesus of Nazareth becomes the basis for tracing the formation and expansion of the Christian movement. (Fall and spring)

101 **Theories and Methods in the Study of Religion** (3) Staff

Seminar taught jointly by the faculty of the Department of Religion. Analysis of different ways in which religious phenomena can be approached. Readings and discussion of some of the epoch-making books in the development of the study of religion. (Fall)

102 **The Psychological Study of Spirituality** (3) Staff

Same as Psyc 109.

103 **Biblical Issues** (3) Duff

May be repeated for credit provided the topic differs.

104 **Jesus** (3) Duff

Comprehensive study of the life and teachings of Jesus with critical attention to sources. Quest for the historical Jesus.

105 **Paul** (3) Duff

Backgrounds of early Christianity, first-century religious and social conditions affecting the spread of Christianity, the life and journeys of Paul, Paul's presentation of the Christian faith.

106 **Judaism** (3) Eisen

A survey of Jewish thought and practice from the biblical to the modern period; introduction to the Hebrew Bible, rabbinic Judaism, Jewish philosophy and mysticism, Judaism in the modern period; an examination of the central rituals in Judaism, including Sabbath, dietary laws, and major festivals. (Fall)

107 **Rabbinic Thought and Literature** (3) Eisen

The thought-world of rabbinic Judaism in its formative period, 100–500 CE, through a close reading of primary texts in translation selected from Mishnah, Talmud, and Midrash. Topics include Oral Torah, the mechanics of rabbinic law, conceptions of God, views on suffering. The influence of rabbinic Judaism on modern Jewish ethics and thought.

109 **Lost Gospels** (3) Duff

Examination of some of the gospels not included in the Christian canon. These include, among others, Q, the Gospel of Thomas, the Gospel of Mary, and the Gospel of Judas. These lost gospels provide a fresh perspective on the development and diversity of early Christianity.

111 **Myth, Epic, and Novel** (3) Hildebeitel

Religious themes and images of the hero and their cultural significance in literature: e.g., Indo-European, Biblical, Babylonian narrative traditions; Greek epic and drama; Dante, Milton, Dostoevsky, Kafka, Hesse, Faulkner, Beckett.

112 **Jewish Mysticism** (3) Eisen

A historical treatment of the major forms of Jewish mysticism: the ecstatic schools of Merkavah mysticism, medieval German pietism, and Abraham Abulafia; the theosophic mysticism of medieval French and Spanish Kabbalah, Lurianic Kabbalah, and modern Hasidism; examination of major concepts, such as God, man, Israel, Torah, and redemption, as understood by these schools.

113 **Second Temple/Hellenistic Judaism** (3) Duff

History of Judaism from the time of Ezra through the destruction of Jerusalem in 70 CE—canonization of the Pentateuch, Hellenism, Maccabean revolt, growth of sectarian movements, Herod, ferment against Rome in context of Eastern and Western political currents. Use of primary sources, especially the Bible, Josephus, and noncanonical writings.

**115 Jewish Philosophy in the Medieval Period (3)** Eisen

An exploration of Jewish philosophical thinking from the close of the rabbinic period to the end of the Middle Ages through an analysis of four major philosophers—Saadia, Judah Halevi, Maimonides, and Gersonides. Topics include the nature of God, creation, divine providence, prophecy, and the rationale for the biblical commandments.

**116 Modern Jewish Thought (3)** Eisen

Jewish thought from 1800 to the present through an exploration of six preeminent Jewish theologians: Moses Mendelssohn, Hermann Cohen, Martin Buber, A.J. Heschel, J.B. Soloveitchik, and Mordecai Kaplan. The relationship between these thinkers and the major Jewish denominations: Orthodox, Conservative, Reform, and Reconstructionist.

**117 Seminar: Issues in Jewish Thought (3)** Eisen

In-depth exploration of a selected thinker or issue in Jewish thought. Recommended for students with academic background in the study of religion or Judaic studies.

**118 Women in Judaism (3)** Staff

Jewish women's spirituality as reflected in personal writings, ritual, liturgy, and midrash. Jewish women's history and legal status. Same as WStu 150.

**120 The Religions Wage Peace (3)** Oh Koukios

Resources in various world religions that contribute to peacemaking in both interpersonal and political settings. Ways in which the religions have sponsored and/or tolerated violence.

**121 Ethics and the World Religions (3)** Oh Koukios

Modern concepts of ethics and their relation to major world religions; religion as stimulus and barrier to moral change; modern moral issues and religious ethics.

**122 Christian Ethics and Modern Society (3)** Oh Koukios

Nature and principles of Christian life as developed by the Christian community; problems of personal conduct; application to various social institutions.

**123 Issues in Jewish Ethics (3)** Staff

Exploration of current debates about major ethical issues among Jewish thinkers in the Orthodox, Conservative, and Reform denominations; issues in bioethics, feminism, attitudes towards non-Jews, social action, the ethics of war.

**134 The Holocaust in Theology and Literature (3)** Eisen, Ticktin

Theological and literary reactions of Jewish thinkers to the Holocaust; emphasis on evaluating contemporary responses to the Holocaust in light of attitudes toward suffering in the classical Jewish tradition; readings include Fackenheim, Rubinstein, Wiesel, and Appelfeld.

**143 Christianity in the Ancient World (3)** Wallace

Rise and development of Christianity in relation to the culture, philosophy, mystery religions, and general religious life of the Greco-Roman world to A.D. 500.

**144 Medieval Faith and Symbolism (3)** Wallace

- Christian life and thought in the Middle Ages; mystics, saints, popes, and philosophers.
- 145 **Religion in the Renaissance and Reformation (3)** Wallace  
Transformation of the Western understanding of human identity and destiny from the end of the Middle Ages to the Age of Reason.
- 146 **Christianity in the Modern World (3)** Wallace  
Changes in Christian life and thought since 1700, as seen in theology, literature, political life, and religious institutions.
- 151 **The Minor Religions of India (3)** Hebbar  
The history, doctrines, and practices of Zoroastrianism, Jainism, Indian Judaism, Indian Christianity (Nestorian, Jacobite, Catholic, and Protestant), Indian Islam, and Sikhism.
- 152 **South Asian Buddhism (3)** Hebbar  
The life of Buddha, the Buddhist Councils, doctrines of the schools of Hinayana Buddhism, philosophies of the schools of Indian Mahayana Buddhism, history of Buddhism in Sri Lanka, early history of Tibetan Buddhism, and the decline of Buddhism in India.
- 155 **Religion, Myth, and Magic (3)** Staff  
Same as Anth 155.
- 156 **The Goddess in India and Beyond (3)** Hildebeitel  
The goddess traditions of Hinduism, with some attention to goddess traditions in the ancient Near East and the Mediterranean. Classical Sanskrit, Tantric, and popular expressions of Hindu goddess worship. Comparative studies and issues of gender.
- 157 **Indian Philosophy and Mysticism (3)** Hildebeitel



Indian speculative and mystical traditions; late *Vedas*, *Upanishads*, *Bhagavad Gita*, Buddhist, and Hindu soteriological systems.

158 **Hinduism** (3) Hiltebeitel

Study of continuity and change in Hinduism, with emphasis on historical development and the consolidating features of the religion. Attention to relations between classical and popular living forms.

159 **Mythologies of India** (3) Hiltebeitel

The lore of Indian gods (Vedic, Puranic), heroes (epics), and holy men (Hindu, Buddhist, Jain, Tantric); ties with Indian art, caste, cult, cosmology, and spiritual ideals.

160 **Buddhism** (3) Hiltebeitel

Origin, development, and contemporary status of Buddhist life and thought; its impact on Asia.

161 **Islam** (3) Nasr

Origin, development, and contemporary status of Islamic life and thought; its impact on the Near East.

162 **Women in Islam** (3) Pemberton

The ways in which Islam has articulated gender identity and male–female relationships, and conversely, how women have constructed, interpreted, and articulated Islam and their places within it. Same as WStu 162.

163 **Islamic Religion and Art** (3) Nasr

Investigation of major forms of Islamic art, such as calligraphy, architecture, and urban design; Quranic chanting, poetry, and music in relation to the principles of Islamic revelation. Same as AH 119.

**164 Islamic Philosophy and Theology (3)**

Nasr

The major schools of Islamic philosophy and theology, considered in both a morphological and historical manner. The relation between revelation and reason, determination and free will, and divine and human knowledge as well as the relation among science, philosophy, and religion. The development of various schools of thought, from the classical period to the present.

**165 Sufism (Islamic Mysticism) (3)**

Nasr

The foundation of Sufism in the Quranic revelation, its subsequent development, and its significance within Islamic civilization. Doctrines and practices of Sufism; history of the Sufi orders; Sufi literature, particularly in Arabic and Persian. The influence of Sufism upon social and political life and its state and role in the contemporary world, both Islamic and non-Islamic.

**172 Religion in the United States (3)**

Wallace

Growth of religious groups and institutions in relation to American culture, development of religious thought, and analysis of the contemporary religious scene.

**173 Religion in Contemporary America (3)**

Wallace

Trends and currents in American religion in the past fifty years. The nature and meaning of religious pluralism in the United States.

**174 American Judaism (3)**

Staff

Religious thought and institutions with emphasis on contemporary Judaism. Mythic and ritual life of American Jews, including responses to Israel, diaspora, the Holocaust, family and community dynamics.

181 **Women in Western Religion (3)** Staff

Historical, theological, and ethical investigation of the image and role of women in Judaism and Christianity; special consideration of the Biblical experience, the sexual qualifications for religious office, use of male and female images and languages, and contemporary issues. Same as WStu 181.

182 **Religion and Philosophy in East Asia (3)** Aviv, Kang

General introduction to the religions and philosophical tradition of China, Japan, and Korea. Same as EALL 182.

183 **Confucian Literature in East Asia (3)** Kang

General introduction to the Confucian traditions of literature, with an emphasis on history, historical writings, popular tales, and drama in China, Japan, and Korea. Same as EALL 183.

184 **Religion and Ethics in East Asia (3)** Staff

Introduction to the foundational traditions of ethics in China, Japan, and Korea, with an emphasis on their early origins and transformation in pre-modern and contemporary times. Same as EALL 184.

185 **Daoism in East Asia (3)** Kang

Study of the early history of the formation and development of Daoism, its growth into an institutionalized religious organization in China, and its role in the religious and philosophical history of Japan and Korea. Same as EALL 185.

**186 Shamanism in East Asia (3)** Staff

Introduction to the modern theories of Shamanism and the history and practice of Shamanism in China, Japan, and Korea. Same as EALL 186.

**190 Selected Topics (3)** Staff

Critical examination of religious phenomena rendered timely by current events or special resources. Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

**191 Senior Honors Thesis (3)** Staff

Required of and open only to undergraduate honors candidates in religion.  
(Fall and spring)

**PEACE STUDIES**

**10 Introduction to Peace Studies and Conflict Resolution (3)** Oh Koukios

Cross-disciplinary exploration of war and its causes; approaches to peace as a negative concept (absence of war) and as a positive concept (basis for long-range, harmonious relations in personal, social, and international life); exploration of nonviolent responses to conflict, violence, and war. (Fall)

**190 Peace Studies Project (3)** Oh Koukios

Individual project to integrate previous academic experience related to peace studies and a groundwork for possible future engagement with peace concerns through graduate work, career choice, or volunteer activities. To be taken in the semester when requirements for the minor are completed. Permission of instructor required.

**ROMANCE, GERMAN, AND SLAVIC LANGUAGES AND LITERATURES**

*Professor P. Rollberg*

*Associate Professors* G.P. Huvé, Y. Captain, I.R. Vergara, E. Echeverria, C. Britt, R. Robin,

M.R. Gonglewski, M.B. Stein, S. Waisman (*Chair*), M. de la Fuente, M. Belenky, L. Chang

*Assistant Professors* J. Brant, G. Shatalina, L.L. Westwater, J. Marroquin, D.B. Marshall

(*Teaching*)

*Instructor* A. Serrano-Ripoll

*Teaching Instructors* B. Cobeta, M. Sanchez-Samblas, P. Granja-Falconi

*Adjunct Professor* E. Ovtcharenko

*Bachelor of Arts with a major in French language and literature*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Fren 1, 2, 3, 4, 9, 10, 30, or equivalent.
3. Required for the major—30 credit hours consisting of two courses selected from Fren 53, 54, 90; six 100-level courses in French, with at least four in literature, distributed as indicated immediately below; and, in the senior year, Fren 198–99 and a comprehensive examination. The six 100-level courses must include one in literature before 1700 (chosen from Fren 120, 121, 122), two in literature since 1700 (chosen from Fren 123, 124, 125), and three chosen from among all 100-level French courses, with at least one in literature.

*Bachelor of Arts with a major in Hispanic languages and literatures*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Span 1, 2, 3, 4, 9, 10, 30, or equivalent.
3. Required for the major—30 credit hours consisting of two courses selected from Span 53, 54, 90; six 100-level courses in Spanish, with at least four in literature, distributed as indicated

immediately below; and, in the senior year, Span 198–99 and a comprehensive examination. The six 100-level courses must include two in literature before 1800 (chosen from Span 120, 121, 122, 123, 124, 149), two in literature since 1800 (Span 125, 126, 130, 131, 132, 140, 145, 146, 147, 148, 150), and two chosen from among all 100-level Spanish courses.

*Bachelor of Arts with a major in German language and literature*—The following requirements must be fulfilled.

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Ger 5–6 (or Ger 1–2, 3–4).
3. Required courses in the major—Ger 9–10, 109–10; two courses chosen from Ger 91–92 or 161–62; two courses chosen from Ger 111, 161–62 (if not taken above), 165, or the 180s series; four courses chosen from the Ger 170s series.

*Bachelor of Arts with a major in Russian language and literature*—The following requirements must be fulfilled.

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Slav 5–6 (or Slav 1–2, 3–4) and Slav 91–92.
3. Required courses in the major—Slav 9–10, 109–10, 161, and 162; two courses chosen from Slav 171, 172, 173, 174; two courses chosen from Slav 165, 166, 185, 186.

Proficiency requirements for the Russian major: By the end of Slav 11, students consult their advisor to choose one of the following two proficiency tracks. (1) Emphasis on proficiency in speaking—students choosing this track must attain speaking proficiency at the Intermediate High level, as measured by the ACTFL Oral Proficiency Interview; a semester of intensive language study in Russia on an approved program is required unless waived by the department. (2) Emphasis on proficiency in reading—students choosing this track must attain reading

proficiency at the Advanced level on the ACTFL scale, as measured by a departmental examination; Slav 101–2 is required, unless waived by the department.

*Special Honors in French or Hispanic languages and literatures*—In addition to the general requirements stated under University Regulations, a candidate for special honors in French or Hispanic languages and literatures must have attained a 3.75 GPA in the major and at least a 3.0 average overall. Qualified students should consult their major advisor and proseminar professor by the beginning of the fall semester of the senior year to indicate their intention to write an honors thesis.

*Special Honors in German or Russian languages and literatures*—In addition to the general requirements stated under University Regulations, a candidate for special honors must have attained a 3.5 grade-point average in the major and at least a 3.0 average overall. Students must apply for honors candidacy by the end of the first semester of the junior year, must attain speaking proficiency at the Advanced level, as measured by the ACTFL Oral Proficiency Interview, and must successfully complete an honors thesis (Ger or Slav 197–98).

*Minor in French or Hispanic languages and literatures*—Required: 21 credit hours in one of the two fields, consisting of three courses chosen from Fren/Span 30, 53, 54, 90; four additional courses selected from among French/Spanish courses numbered 9 and above, including at least two at the 100 level.

*Minor in Italian language and literature*—Required: 21 credit hours consisting of Ital 9, 10, and five courses chosen in consultation with the advisor from Ital 30 through 197.

*Minor in German language and literature*—Ger 1–2, 3–4 (or 5–6); Ger 9–10 (or 101–2); two courses chosen from Ger 91–92, 109–10, or 161–62; two additional 100-level German courses (excluding Ger 101–2).

*Minor in Russian language and literature*—Slav 1–2 and 3–4 (or 5–6), 9–10 (or 101–2), and four courses chosen from Slav 91–92 and 161 through 186.

**Placement examinations:** A student who has not been granted advanced standing and who wishes to continue in college the language begun in high school must take a placement examination before registration. Upon completion of the examination, assignment is made to the appropriate course.

**Departmental prerequisites:** Prerequisites are listed with each Romance language course up to 110; courses numbered 120 and higher have prerequisites of two courses from 53, 54, 90, or approval of the instructor. Completion of Ger 109 or 110 is prerequisite to courses in the Ger 170s series.

**Note:** In general, Romance language courses are conducted entirely in the language concerned. Aural comprehension, speaking, reading, and writing are the basis of all courses through Fren/Ital 10, Span 12, and Port 9, with culture integrated from the start as an essential dimension of language acquisition.

## FRENCH

### 1 **Basic French I** (4) Staff

Handling the immediate context of daily experience in spoken and written French: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.  
(Fall, spring, and summer)

### 2 **Basic French II** (4) Staff

Speaking and writing in French about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses



and conjectures. Prerequisite: Fren 1 or equivalent. Laboratory fee. (Fall, spring, and summer)

**3 Intermediate French I (3)**

Brant and Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (e.g., repeating or relaying messages, giving reports, summarizing).

Prerequisite: Fren 2 or equivalent. Laboratory fee. (Fall, spring, and summer)

**4 Intermediate French II (3)**

Brant and Staff

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Fren 3 or equivalent.

Laboratory fee. (Fall, spring, and summer)

**9 Language, Culture, and Society I (3)**

Huvé and Staff

Development of strong conversational skills and the rudiments of expository writing.

The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Fren 4. Laboratory fee. (Fall, spring, and summer)

**10 Language, Culture, and Society II (3)**

Huvé and Staff

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects.

Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: Fren 9. Laboratory fee. (Fall, spring, and summer)

**20 French Pronunciation (3)** Huvé

The sounds of French. Oral readings, presentations, recitation. Poetry, scenes from plays. Emphasis on phonetics and diction, with attention to accent, rhythm, and intonation. Prerequisite: Fren 10. Laboratory fee. (Spring)

**30 Introduction to French Literature (3)** Belenky, Brant, Chang

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. French and Francophone literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: Fren 10. (Fall and spring)

**49 French for Graduate Students (0)** Staff

For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours. (Fall, spring, and summer)

**53 Medieval and Early Modern French Literature in Context (3)** Chang and Staff

Texts of the Middle Ages to the 17th century studied in their historical, social, and cultural contexts. Topics may include feudal society and the literature of courtly love; humanism, Rabelais, and Renaissance poetry; women and salon writing; Versailles, absolutism, and classical theater. Prerequisite: Fren 30 or equivalent. (Fall)

**54 Modern French Literature in Context (3)** Belenky

Texts of the 18th century to the present in historical, social, and cultural contexts. Topics may include *philosophes* and the rise of social consciousness; the French

Revolution and Romanticism; dada and surrealism; existentialism and World War II; decolonization and francophone literature. Prerequisite: Fren 30 or equivalent.

(Spring)

**56 Topics in French and Francophone**

Belenky, Chang

**Literatures and Cultures in Translation (3)**

Dynamics of French-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Spring)

**90 Textual Analysis (3)**

Staff

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature. Prerequisite: Fren 30 or equivalent. (Spring)

**108 Advanced French Grammar and Style (3)**

Brant and Staff

Composition, drills, dictations. Translations into French. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: Fren 10. (Fall)

**109 Contemporary France (3)**

Huvé and Staff

Emphasis on advanced oral work. Discussion of French culture and civilization, based on contemporary writings and video documents. Prerequisite: Fren 10. Laboratory fee. (Fall)

**110 Business and Commercial French (3)**

Huvé

Structure and language of French economic institutions. Discussion of legal, financial, and administrative documents. Oral and written reports. Preparation for the certificate of the Paris Chamber of Commerce. Prerequisite: Fren 10. (Spring)

- 120 **Studies in Medieval French Literature** (3) Chang  
Readings and analysis of the major literary texts from the 11th through 15th centuries.  
Chansons de geste, courtly literature, fabliaux, drama, lyric and didactic poetry.
- 121 **French Literature of the Renaissance** (3) Chang  
Sixteenth-century prose and poetry in the context of cultural and historical movements.  
Topics may include humanism; concepts of self and subjectivity; the wars of religion;  
the discovery of the New World; court and city life; the private and public spheres;  
religious and secular love. (Fall, alternate years)
- 122 **The Age of Classicism** (3) Staff  
Drama, philosophy, criticism, poetry, and fiction of the 17th century. Topics may  
include *préciosité*, baroque, Jansenism, classicism, and rationalism in the context of  
the major social, political, and religious movements of the period.  
(Spring, alternate years)
- 123 **The Age of Enlightenment** (3) Staff  
The major novelists, dramatists, and *philosophes* of the 18th century. The works of  
Montesquieu, Voltaire, Rousseau, and Diderot and their relationship to the social,  
political, and philosophical thought of the period. (Fall, alternate years)
- 124 **19th-Century French Literature and Culture** (3) Belenky  
Key aspects of 19th-century French literature in its historical, cultural, and political  
context. Major authors and literary movements are studied through the lens of a  
particular theme, which varies from year to year. (Fall, alternate years)
- 125 **Studies in 20th-Century French Literature** (3) Staff

Major literary movements of the 20th century: avant-garde, surrealism, existentialism, *nouveau roman*, and *nouveau théâtre*. (Spring)

130 **Studies in Genre** (3) Chang, Belenky

Study in narrative, dramatic, or lyric form. Topics vary. May be repeated for credit.  
(Spring)

131 **Topics in the History of French Cinema** (3) Staff

French cinema from its inception to the “New Wave.” The relationship of filmmaking and audience reception to the evolution of French society and political institutions. The language of cinema as it evolves according to periods and genres and as critics and filmmakers create a theoretical discourse specific to film. Laboratory fee. (Spring)

132 **Topics in 20th-Century Francophone Literature and Cinema** (3) Staff

Analysis of relations between France and its former colonies as manifested in the literature and cinema of France and the Francophone world. Race and gender relations; exile; nationalism; and identity and place as seen through various literary and cinematic responses to the discourses of metropolitan France by its former colonies. Laboratory fee. (Fall)

133–34 **Special Topics in French Literature** (3–3) Staff

May be repeated for credit provided the topic differs.

140 **Writing Women** (3) Belenky, Chang

Dynamics of gender in French literature and culture with emphasis on women as agents and objects of representation. Gender roles in the formation of social biases, norms, and power structures. Texts range from the Middle Ages to the present. (Spring)

197 **Independent Study** (arr.) Staff

Admission by permission of department chair and instructor. May be repeated for credit.

198–99 **Proseminar** (3–3) Chang

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Fren 198: textual analysis, literary criticism, theory, and methods. Fren 199: the concepts of literary history and the history of French literature; periods, authors, genres, topics. (Academic year)

**GERMAN**

1–2 **First-Year Basic German** (4–4) Gonglewski and Staff

First part of beginning course in fundamentals of speaking, understanding, reading, and writing German. Prerequisite to Ger 2: Ger 1. Laboratory fee. (Academic year)

3–4 **Second-Year Basic German** (4–4) Gonglewski and Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing German. Prerequisite to Ger 3: Ger 2 or equivalent. Prerequisite to Ger 4: Ger 3. Laboratory fee. (Academic year)

5–6 **Intensive Basic German** (8–8) Gonglewski and Staff

Beginning intensive course in fundamentals of speaking, understanding, reading, and writing German (equivalent to Ger 1–2 and 3–4). Recommended for majors.

Prerequisite to Ger 6: Ger 2 or 5 or equivalent. Laboratory fee. (Academic year)

9–10 **Intermediate German** (3–3) Staff

Practice in speaking, listening, reading, and writing at the intermediate level.

Prerequisite: Ger 4 or 6 or permission of instructor. (Academic year)

**91–92 Introduction to German Literature—in English (3–3)** Stein and Staff

Ger 91: Survey of German literature 1700–1830, including the Enlightenment through *Sturm und Drang*, classicism, and romanticism. Ger 92: Survey of German literature 1830–1950, including Young Germany through realism, naturalism, expressionism, and the literature of the Third Reich years (exile literature and inner emigration). (Academic year)

**101–2 Readings in Contemporary German (3–3)** Staff

Analysis of representative readings of expository prose from German newspapers, periodicals, and other publications. Prerequisite: for Ger 101, Ger 4 or 6 or equivalent; for Ger 102, Ger 101. (Academic year)

**109–10 Introduction to German Studies (3–3)** Stein and Staff

An introduction to approaches, concepts, and analytical tools for study in the field, complemented by advanced practice in speaking, listening, reading, and writing. Prerequisite: Ger 10 or permission of instructor. (Academic year)

**111 Business German (3)** Gonglewski

Introductory course preparing students to function in business-related communicative situations, with an emphasis on language skills necessary for work in areas such as marketing and finance. Prerequisite: Ger 10 or permission of instructor. (Spring)

**161–62 German Culture—in English (3–3)** Stein and Staff

The central problems, issues, and events that have shaped the development of German culture from antiquity to the present. Emphasis on products and processes of German culture in social, historical, and political contexts. (Academic year)

**165 20th-Century German Literature—in English (3)** Stein and Staff

Survey of the major trends in the works by modernist, exile, postwar, and contemporary German writers such as Kafka, Thomas Mann, Duerrenmatt, and Grass.  
(Fall)

171 **The Age of Goethe—in German (3)** Staff

Readings of major works of Weimar classicism in their historical and cultural context.

172 **From Romanticism to Realism—in German (3)** Stein and Staff

Readings in German romanticism, literature of the “young Germany” movement (Heine), and realism (Fontane, Storm).

173 **From Naturalism to Expressionism—in German (3)** Stein

Study of various literary movements between 1880 and 1914: naturalism, impressionism, symbolism, and expressionism (Hauptmann, Hesse, Thomas Mann, Kafka).

174 **Inside and Outside the Third Reich—in German (3)** Stein

Analysis of literary developments inside the Nazi state (propaganda literature, literature of resistance, and inner immigration) and the literature of exile (Seghers, Remarque).

175 **Literature of Two Germanies—in German (3)** Stein

Evolution of East and West German literatures after World War II, their separate developments and ultimate unification.

181 **History of German Cinema—in English (3)** Rollberg and Staff

A detailed historical and cultural survey of German cinema from the first moving picture devices (1895) to the expressionistic classics of the 1920s and the collapse of the Nazi film industry in 1945. All films are subtitled.



- 182 **The Fairy Tale from the Grimms to Disney—in English (3)** Stein  
Survey of the changing form, structure, and meaning of the fairy tale in its traditional contexts, modern transformations and critical interpretations, with readings by 19th-century European collectors and 20th-century critics.
- 183 **Berlin Before and After the Wall—in English (3)** Stein  
The political, social, and cultural developments in Berlin from 1945 to the present through a reading of selected primary documents, historical analyses, and short literary texts.
- 184 **German Thought—in English (3)** Staff  
An overview of German ideas about culture, religion, society, and politics from the 16th century to the present. Readings from such writers as Luther, Leibniz, Kant, Schiller, Hegel, Marx, Nietzsche, Freud, Weber, Heidegger, Adorno, and Habermas.
- 185 **Literary Voices and the Fascist Experience—in English (3)** Staff  
A survey of writers anticipating as well as reflecting on Germany's plunge into the totalitarian abyss of fascist politics, including H. Mann, Kafka, Juenger, Brecht, Werfel, Thomas Mann, Lenz, Frisch, Duerrenmatt, and various forms of Holocaust poetry.
- 186 **German Women Writers of the 19th and 20th Centuries (3)** Staff  
The changing literary and social roles of German women of the 19th and 20th centuries, examined through selected readings of women's literary production and culture.
- 187 **German Cinema After 1945 (3)** Stein

The evolution of German cinema, from postwar examinations of the Nazi period through the social and political developments in the two German states. National and international influences; filmic treatments of the two German pasts since unification.

195 **Special Topics (3)** Staff

May be repeated for credit provided the topic differs.

197–98 **Senior Honors Thesis (3–3)** Staff

Senior honors thesis on a topic related to German language, literature, or culture.

Required of and open only to honors candidates in the department. (Academic year)

## ITALIAN

1 **Basic Italian I (4)** Staff

Handling the immediate context of daily experience in spoken and written Italian: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee. (Fall and spring)

2 **Basic Italian II (4)** Staff

Speaking and writing in Italian about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Ital 1 or equivalent. Laboratory fee. (Fall and spring)

3 **Intermediate Italian I (3)** Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing).

Prerequisite: Ital 2 or equivalent. Laboratory fee. (Fall and spring)

**4 Intermediate Italian II (3)**

Staff

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Ital 3 or equivalent.

Laboratory fee. (Fall and spring)

**9 Language, Culture, and Society I (3)**

Staff

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Ital 4. Laboratory fee.

**10 Language, Culture, and Society II (3)**

Staff

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects. Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: Ital 9. Laboratory fee.

**30 Introduction to Italian Literature (3)**

Westwater

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Emphasis on study of Italian literature in its cultural context. Close reading approach and introduction to literary vocabulary. Prerequisite: Ital 10 or equivalent. (Fall)

**53 History of Italian Literature from the**

Westwater

**Middle Ages Through the 17th Century (3)**

Lecture and discussion in Italian. Development of genre and movements. Selected readings across these periods plus reading of complete texts of epics, essays, novels, and plays. Prerequisite: Ital 10 or equivalent. (Fall)

**54 History of Italian Literature from the 18th Through the 20th Century (3)** Westwater

Lecture and discussion in Italian. Philosophical and literary movements of the modern period. Selected readings across the period plus the reading of complete texts of novels and drama. Prerequisite: Ital 10 or equivalent. (Spring)

**56 Italian Literature and Culture in Translation (3)** Westwater

Dynamics of Italian-speaking societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. A laboratory fee may be required. (Fall)

**90 Textual Analysis (3)** Westwater

Close examination of critical methods and vocabulary used in literary study as applied to Italian Literature. Attention to linguistic and stylistic difficulties in textual analysis. Prerequisite: Ital 30 or equivalent. (Spring)

**108 Advanced Italian Grammar and Style (3)** Staff

Compositions, drills, dictations. Translations into Italian. Study of vocabulary and syntax with emphasis on stylistic devices. Prerequisite: Ital 10. (Fall)

**120 Studies in Medieval and Early Renaissance Literature (3)** Westwater

Works by Dante, Petrarca, and Boccaccio. Emphasis on structure, rhetorical features, and problems of narrative organization. Specific attention to historical and ideological aspects of the works as well as to cultural influence. Prerequisite: Ital 90 or equivalent.

**131 The Italian Novel (3)**

Westwater and Staff

A reading of the most important Italian novelists of the 19th and the 20th centuries: Manzoni, Verga, Bassani, Calvino, Eco, Sanguinetti. Study of the relations of each work to its social and cultural context and to the novel as a genre. Prerequisite: Ital 90 or equivalent.

**181 Italian Journeys Medieval to Postmodern (3)**

Westwater

Italy's dual role as the home of legendary travelers and the destination for an endless stream of tourists. The reality and metaphor of travel viewed through travel diaries, ship logs, letters to patrons, maps, travel guides, poetry, and film.

**197 Independent Study (arr.)**

Staff

Admission by permission of department chair and instructor. May be repeated for credit.

**PORTUGUESE**

**1 Basic Portuguese I (4)**

Byrnes

Handling the immediate context of daily experience in spoken and written Portuguese: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee.  
(Fall)

**2 Basic Portuguese II (4)**

Byrnes

Speaking and writing in Portuguese about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Port 1 or equivalent. Laboratory fee.  
(Spring)

**3 Intermediate Portuguese I (3)**

Byrnes

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing).

Prerequisite: Port 2 or equivalent. Laboratory fee. (Fall)

**4 Intermediate Portuguese II (3)**

Byrnes

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Port 3 or equivalent.

Laboratory fee. (Spring)

**8 Portuguese for Spanish Speakers (3)**

Byrnes

An intensive course designed for speakers of Spanish to develop competence quickly in spoken and written Portuguese. Laboratory fee. (Spring)

**9 Language, Culture and Society I (3)**

Byrnes

Development of strong conversational skills and the rudiments of expository writing. The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Port 4. Laboratory fee. (Fall)

**SLAVIC**

**1–2 First-Year Russian (4–4)**

Shatalina and Staff

First part of beginning course in fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite to Slav 2: Slav 1. Laboratory fee. (Academic year)

**3–4 Second-Year Russian (4–4)**

Shatalina and Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing Russian. Prerequisite to Slav 3: Slav 2 or equivalent. Prerequisite to Slav 4: Slav 3. Laboratory fee. (Academic year)

**5–6 Intensive Basic Russian (8–8)**

Robin and Staff

Beginning intensive course in fundamentals of speaking, understanding, reading, and writing Russian (equivalent to Slav 1–2 and 3–4). Recommended for majors.

Prerequisite to Slav 6: Slav 2 or 5 or equivalent. Laboratory fee. (Academic year)

**9–10 Intermediate Russian (5–5)**

Shatalina and Staff

Practice in speaking, listening, reading, and writing at the intermediate level.

Prerequisite: Slav 4 or 6 or permission of instructor. (Academic year)

**13–14 Russian for Heritage Speakers (3–3)**

Guslistova

Prepares heritage speakers of Russian for advanced study in Russian at the third-year level and beyond, including content courses in literature and area studies.  
(Academic year)

**21–22 Basic Czech (3–3)**

Staff

Beginning course in fundamentals of speaking, understanding, reading, and writing Czech. Prerequisite to Slav 22: Slav 21 or equivalent. Laboratory fee.  
(Offered when the demand warrants)

**23–24 Second-Year Basic Czech (3–3)**

Staff

Second half of beginning course in fundamentals of speaking, understanding, reading, and writing Czech. Prerequisite to Slav 23: Slav 22; prerequisite to Slav 24: Slav 23.

(Offered when the demand warrants)

31–32 **Basic Polish (3–3)**

Staff

Beginning course in fundamentals of speaking, understanding, reading, and writing Polish. Prerequisite to Slav 32: Slav 31. (Offered when the demand warrants)

33–34 **Intermediate Polish (3–3)**

Staff

Practice in speaking, listening, reading, and writing at the intermediate level.

Prerequisite: Slav 32. (Offered when the demand warrants)

41–42 **Ukrainian Language and Culture (3–3)**

Staff

Introduction to Ukrainian language, culture, and history.

(Offered when the demand warrants)

91–92 **Introduction to 19th-Century Russian Literature—in English (3–3)**

Rollberg

Slav 91: Russian literature and society, 1800–1860s, concentrating on the Golden Age of Russian literature; poems and stories by Pushkin, Lermontov, Gogol, and Turgenev.

Slav 92: Russian literature and society on their way to modernity; great works of prose and drama by Dostoevsky, Tolstoy, Chekhov, and Bunin. (Academic year)

101–2 **Readings in the Russian Press (3–3)**

Guslistova

Reading and analysis of current Russian periodicals. For departmental majors and graduate students with a reading-language proficiency requirement.

109–10 **Russia Today: Topics in Advanced Russian (3–3)**

Staff

Practice in speaking, listening, reading, and writing at the advanced level. Prerequisite: Slav 10 or permission of instructor. (Academic year)



161 **Russian Culture to 1825 (3)** Staff

Survey of Russian cultural heritage from its ancient origins through the early 19th century. Architecture from the medieval period through the end of the Empire style. Iconography, the influence of the Church, and effects of the West on Russian culture.

162 **Russian Culture since 1825 (3)** Staff

Survey of Russian culture from the 19th century through the present, including intellectual movements; realism in music, art, and theatre; ballet; avant-garde painting; and effects of Soviet policies and of Perestroika.

165 **20th-Century Russian Literature to World War II (3)** Staff

Russian literature and culture of the first half of the 20th century: the impact of the revolution on writers and literature; avant-garde, socialist realism, and emigre literature (Nabokov)—in English.

166 **Russian Literature from World War II to the Present (3)** Staff

Literature in wartime and in postwar years from Solzhenitsyn to the latest trends: the “thaws,” village and urban prose, post-Soviet literature, Russian postmodernism—in English.

171 **19th-Century Russian Prose (3)** Ovtcharenko

Reading and discussion of selected prose texts of the 19th century from Pushkin to Chekhov—in Russian. Prerequisite: Slav 10 or equivalent; Slav 91–92.  
(Fall, even years)

172 **19th-Century Russian Poetry (3)** Ovtcharenko

Reading and discussion of selected poetry of the 19th century (Pushkin, Lermontov, Nekrasov, and others)—in Russian. (Spring, odd years)

173 **20th-Century Russian Prose** (3) Ovtcharenko

Reading and discussion of selected prose of the 20th century from Bunin to Solzhenitsyn—in Russian. (Fall, odd years)

174 **20th-Century Russian Poetry** (3) Ovtcharenko

Reading and discussion of selected poetry of the 20th century from Blok to Brodsky—in Russian. Prerequisite: Slav 10 or equivalent; Slav 165, 166. (Spring, even years)

185–86 **Introduction to Russian Cinema** (3–3) Rollberg

(In English; all films subtitled.) Slav 185: From Russian silents to the introduction of sound and color (1896–1946). The great revolutionary directors—Eisenstein, Pudovkin, Dovzhenko. Slav 186: From post-war to post-perestroika cinema (since 1946): war films, adventure, films about youth.

195 **Special Topics** (3) Staff

May be repeated for credit provided the topic differs.

197–98 **Senior Honors Thesis** (3–3) Staff

Senior honors thesis on a topic related to Russian language, literature, or culture.

Required of and open only to honors candidates in the department.

**SPANISH**

1 **Basic Spanish I** (4) Staff

Handling the immediate context of daily experience in spoken and written Spanish: identifying, describing, and characterizing people, objects, places, and events; giving information and instructions; issuing simple commands and requests. Laboratory fee. (Fall, spring, and summer)

2 **Basic Spanish II** (4) Staff

Speaking and writing in Spanish about past and future events: telling a story (narrating and describing in the past), promising, predicting, and proposing simple hypotheses and conjectures. Prerequisite: Span 1 or equivalent. Laboratory fee.

(Fall, spring, and summer)

**3 Intermediate Spanish I (3)** Staff

Increasing active vocabulary, reinforcing mastery of basic grammar, dealing with more complex structures (verbal phrases, subordinate clauses), and using some patterns of indirect speech (repeating or relaying messages, giving reports, summarizing).

Prerequisite: Span 2 or equivalent. Laboratory fee. (Fall, spring, and summer)

**4 Intermediate Spanish II (3)** Staff

Consolidation and further expansion of the ability to understand as well as produce a more complex level of oral and written discourse emphasizing subjective expression: issuing indirect commands and requests; giving opinions; making proposals, building arguments; defending and criticizing ideas. Prerequisite: Span 3 or equivalent.

Laboratory fee. (Fall, spring, and summer)

**5–7 GW Madrid Study Center: Spanish** Staff

**Language and Culture I–II–III (3–3–3)**

Offered through the Madrid Program only.

**9 Language, Culture, and Society I (3)** Staff

Development of strong conversational skills and the rudiments of expository writing.

The vocabulary and structures necessary to move from handling everyday experience and subjective expression to the exposition of more abstract thought and ideas and discussion of political, social, and cultural issues. Prerequisite: Span 4. Laboratory fee.

(Fall, spring, and summer)

**10 Language, Culture, and Society II (3)** Staff

Continued expansion of the range and complexity of conversational skills and further development of the writing of effective expository prose on a broad range of subjects.

Short literary texts serve as the basis for oral discussion, analytical reading, and writing brief critical essays. Prerequisite: Span 9. Laboratory fee. (Fall, spring, and summer)

**11 Intensive Basic Spanish (8)** Staff

Equivalent to Span 1–2. Laboratory fee. (Fall and spring)

**12 Intensive Intermediate Spanish (6)** Staff

Equivalent to Span 3–4. Prerequisite: Span 2 or 11. Laboratory fee. (Fall and spring)

**30 General Readings in Spanish Literature (3)** Staff

Readings, textual analysis, and writing on a broad selection of texts from different genres and periods. Hispanic literatures in their cultural contexts. Close reading approach and introduction to literary vocabulary. Prerequisite: Span 108.

(Fall and spring)

**49 Spanish for Graduate Students (0)** Staff

For graduate students preparing for reading examinations. No academic credit. Tuition is charged at the rate of 3 credit hours. (Fall, spring, and summer)

**53 Epic and Satire (3)** Britt, Vergara

The historical, cultural, and political ties between Spain and Latin America and their representation in epic and satiric modes of imaginative literature as developed in drama, poetry, and prose. Lecture and discussion in Spanish. Prerequisite: Span 30 or equivalent. (Fall)

**54 Tragedy and Comedy (3)**

Britt, Vergara

The historical, cultural, and political ties between Spain and Latin America and their representation in tragic and comic modes of imaginative literature as developed in drama, poetry, and prose. Lecture and discussion in Spanish. Prerequisite: Span 30 or equivalent. (Spring)

**56 Topics in Hispanic Literatures**

Britt, Waisman

**and Cultures in Translation (3)**

Dynamics of Hispanic societies and their cultures studied through literature, art, or film. Topics vary. Readings and lectures in English. The course may be repeated for credit. Laboratory fee may be required. (Fall and spring, alternate years)

**90 Textual Analysis (3)**

Vergara and Staff

Methodology and vocabulary of literary criticism. Application of various principles of textual analysis and critical approaches to literature. Prerequisite: Span 30 or equivalent. (Fall and spring)

**108 Advanced Spanish Grammar and Style (3)**

Serrano-Ripoll and Staff

Composition, drills, dictations. Translations into Spanish. Study of vocabulary and syntax, with emphasis on stylistic devices. Prerequisite: Span 10. (Fall and spring)

**109 Contemporary Spain and Latin America (3)**

Staff

Emphasis on advanced oral work. Discussion of Hispanic culture and civilization, based on contemporary writings and video documents. Laboratory fee. Prerequisite: Span 10. (Fall and spring)

**110 Business and Commercial Spanish (3)**

Staff

Structure and language of Latin American and Spanish economic institutions.

Discussion of legal, financial, and administrative documents. Oral and written reports.

Prerequisite: Span 10. (Spring)

**120 Studies in Medieval Spanish Literature (3)** Staff

Reading and analysis of the major literary texts from the 11th through the 15th century.

Attention paid to linguistic aspects of Old Spanish.

**121 Studies in Golden Age Literature (3)** Staff

Major texts of the 16th and 17th centuries. Topics may include lyric poetry and the “invention” of subjectivity; prose fiction; *comedia* and the relation between private and public life; humanism and the classical tradition; the invention of the press, the status of writing, and the new culture of the book; the (post)modernity of Golden Age literature.

**122–23 Cervantes’ *Don Quijote* and the Rise of the Novel (3)** Staff

Issues raised in the text of *Don Quijote*: literature and life, words and deed, the fashioning of self, the structures of narrative, the limits and possibilities of representation, and the relation between appearance and reality, knowledge and understanding, fiction and truth. Cervantes’ “invention” of the novel. Prerequisite to Span 123: Span 122 or approval of instructor. (Academic year)

**124 Reason, Superstition, and Literature in 18th-Century Spain (3)** Britt

The development of neoclassical aesthetics in Spain: the confrontation of reason and superstition; the autonomy of critical thought vis-à-vis the doctrines of the Catholic Church and the absolute powers of the monarchy; culture as state-sponsored spectacle;

the split between elites and masses, high and low culture; the conjunction of “good taste” and pedagogy.

**125 The Myth of the Two Spains (3)**

Britt

Literature as an expression of the institutionalization of liberalism in 19th-century Spain and of official and popular resistance to this modernizing credo. Topics may include the romanticism of Quintana, Espronceda, Blanco-White and Becquer; the *costumbrismo* of Castro and Larra; the realism of Galdós; and the naturalism of Pardo Bazán and Clarín.

**126 The Literature of Spain’s First Century Without Empire (3)**

Britt

Spain’s imperial crisis and its persistence throughout the 20th century as a central theme in Spanish literary and intellectual culture. Topics may include decadence and regeneration; modern Spanish nationalism and cultural imperialism; Hispanicism and pan-nationalism; the Spanish Civil War, fascism and liberalism; the transition from fascism to democracy. (Fall)

**130 Poetry of Spain and Spanish America (3)**

Vergara

Study of poetic traditions and genres. Analysis of representative texts from the early modern to the contemporary periods. Authors may include: Garcilaso, Quevedo, Darío, Silva, Lorca, Neruda, Salinas, Jiménez, Gioconda Belli. (Spring)

**131 Topics in the Cinema of the Hispanic World (3)**

Staff

Film as a language of cultural and historical testimony in Spanish America and Spain. Topics may include the Silent Era, Surrealism, the Mexican Golden Age of the ’40s, the New Cinema of the ’50s, Peronist cinema in Argentina, socialist film in Cuba, and

postmodern production in the Hispanic world. May be repeated for credit. Laboratory fee. (Fall)

**132 Theatre and the Hispanic Experience (3)**

Britt, Captain

Theatrical representation: presence and performance, body, voice, dialogue, and the unfolding of conflict. Theatrical traditions and movements may include Golden Age drama; neo-Classical and Romantic drama of the 19th century; drama of political protest; existentialist drama and the theater of the avant-gardes.

(Spring, alternate years)

**133–34 Special Topics in Spanish and Spanish-American Literature (3–3)**

Staff

May be repeated for credit provided the topic differs.

**140 Latin American Women Writers (3)**

Vergara

Works of well-established women writers (e.g., Sor Juana Inés de la Cruz, Gabriella Mistral, and Luisa Valenzuela) and of more recent writers (e.g., Elena Poniatowska, Diamela Eltit, Ana Lydia Vega, Cristina Peri-Rossi, and Laura Esquivel) discussed in relation to feminist principles of criticism. (Spring)

**145 Modern Spanish-American Poetry (3)**

Vergara, Waisman

Poetry after modernism; forms and themes that characterize the work of authors such as Agustini, Guillén, Huidobro, Lezama, Mistral, Neruda, and Palés. (Spring)

**146 Spanish-American Short Fiction (3)**

Captain, Vergara, Waisman

Short prose narratives as agents of questioning textual meaning and subverting former literary traditions. Writers may include Arenas, Borges, Cortázar, Fuentes, García Márquez, Quiroga, Peri Rossi, Ana Lydia Vega, Zapata Olivella. (Fall)

**147 Spanish-American Polemics (3)**

Britt, Captain, Waisman



Relations between state and nation in post-independence literary and political polemics of 19th century Spanish America. Topics may include the essay as a new genre for a new age; the figure of the public intellectual vis-à-vis the processes of state and nation formation; the post-colonial state and its imagined national, ethnic, racial, and economic communities. (Spring, alternate years)

148 **New Narrative in Spanish America (3)** Captain, Vergara, Waisman

Experimental fiction in Spanish America, with focus on literature of the mid-1960s through the present. Authors may include Alejo Carpentier, Julio Cortázar, Diamela Eltit, Carlos Fuentes, Cabrera Infante, Lezama Lima, García Márquez, Octavio Paz, Ricardo Piglia, Elena Poniatowska, Mario Vargas Llosa. (Fall)

149 **Spanish-American Colonial Literature (3)** Captain, Vergara

Analysis of chronicles, essays, memoirs, epistolary exchanges, and poetry contextualized vis-à-vis the medieval and Renaissance values of Imperial Spain. Authors may include Cabeza de Vaca, Bartolomé de las Casas, Colón, Cortés, Díaz del Castillo, El Inca Garcilaso de la Vega, Sor Juana Inés de la Cruz, Rodríguez Freile, Sepúlveda. (Spring)

150 **Spanish-American Romanticism and Modernism (3)** Captain, Vergara, Waisman

Study of two movements that shaped literary expression of Spanish America at the turn of the century and influenced political and cultural thought throughout the Hispanic world. Authors may include Heredia, Echeverría, Avellaneda, Isaacs, Darío, Martí, Lugones. (Fall, alternate years)

197 **Independent Study (arr.)** Staff

Admission by permission of department chair and instructor. May be repeated for credit.

**198–99 Proseminar (3–3)**

Staff

Required of all majors; preparation for the major field examination. Literature in relation to the other arts and the social sciences. Span 198: textual analysis, literary criticism, theory, and methods. Span 199: the concepts of literary history and the history of Spanish literature; periods, authors, genres, topics. (Academic year)

**ROMANCE LANGUAGES AND LITERATURES**

**55 Topics in Romance Literatures and Cultures in Translation (3)**

Staff

Topics and themes providing a multicultural and comparative approach to the study of the cultural productions of French, Italian, and Spanish-speaking people. Readings and lectures in English. May be repeated for credit provided the topic varies. A laboratory fee may be required. (Fall)

**SCHOOL OF ENGINEERING AND APPLIED SCIENCE**

This interdisciplinary course is offered under the joint auspices of the departments in the School of Engineering and Applied Science.

**1 Engineering Orientation (1)**

Dolling and Staff

Introduction to careers in engineering and computer science, University resources, and computer skill development. Emphasizes teamwork skills by applying them to several design projects. (Fall)

**SIGN LANGUAGE**

See **Speech and Hearing Science**.

**SLAVIC**

See **Romance, German, and Slavic Languages and Literatures.**

## **SOCIOLOGY**

*University Professor* A. Etzioni

*Professors* P.H.M. Lengermann (*Research*), W.J. Chambliss, S.A. Tuch (*Chair*), R. Weitzer, R.J.

Cottrol, G.D. Squires, R. Whitaker

*Associate Professors* H. Nashman, C. Deitch, C.E. Kubrin, I. Kennelly

*Assistant Professors* D.S. Eglitis, F. Buntman, L. Torres, H. Ishizawa

*Professorial Lecturers* V. Sardi, R.B. Zamoff, P.A. Konwerski, M. Mashayekhi, D. Marshall

*Lecturers* M. Wenger, L. Joseph

*Bachelor of Arts with a major in sociology*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in the major—Soc 101, 102, 103, 104, 197, and seven additional 100-level sociology courses including at least two courses chosen from the 160s or 170s groups. It is recommended that Soc 101 and 102 be taken by the junior year.

*Bachelor of Arts with a major in criminal justice*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in the major—Soc 3, 101, 102, 136, 145, 192; PAd 117; and five courses chosen from Soc 135, 167, 178, 184, 189, 785; Psyc 11, 154; ForS 103–4; PSc 113, 115; Anth 150; Hist 175; Econ 167. Of the five courses, at least one sociology course and at least one non-

sociology course must be taken; students must verify that they have met any prerequisites before registering. Soc 101 and 102 should be taken by the junior year.

*Bachelor of Arts with a major in human services*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—Soc 1.
3. Required courses in related areas—Phil 135 and one course chosen from Comm 40, 41, 42, 120.
4. Required courses in the major—HmSr 152, 171, 172, 176, 177, 182, 195; Soc 101, 104.

*Combined Bachelor of Arts with a major in criminal justice or human services and Master of Public Administration*—Interested students should contact their advisor by the end of their sophomore year.

*Special Honors*—In addition to meeting the general requirements stated under University Regulations, a candidate for graduation with Special Honors in sociology or criminal justice or human services must maintain a 3.3 grade-point average in the major, must be registered in Soc 195 or HmSr 193 by fall of their senior year, and must complete a senior honors thesis.

*Minor in sociology*—18 hours of course work are required, including Soc 1, either Soc 103 or 104, plus 12 hours of electives in sociology courses at the 100 level, excluding Soc 192 and 197.

*Minor in criminal justice*—18 hours of course work are required, including Soc 1, 3, 136, and 145, plus 6 hours of electives chosen from Soc 135, 167, 178, 184, 189, 785; Psyc 11, 154; ForS 103; PSc 113 or 115; PAd 125.10; Anth 150; and Hist 175. At least one elective must be a sociology course.

*Minor in human services*—A minimum of 18 hours of course work, including HmSr 152 (6 hours), 176, 182, 195, and an elective (Soc 1 is recommended) chosen with permission of advisor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Note:** A student majoring in sociology may not declare a second major or a minor in criminal justice, or vice versa. Students in all three departmental majors are required to earn a grade of *C–* or better in any course specifically required in the major. If a student receives a grade of *D+*, *D*, or *D–* in a required course, the student may either (1) repeat the course, in which case the grade in the repeated course must be no lower than a *C–*, and grades for both the original and repeated courses will appear on the student's transcript; or (2) take a 100-level course in the same department, in addition to the minimum number of courses required for the major, and receive a grade no lower than *C–*. Option 1 must be approved by the department chair in writing before the student may register for a course a second time.

**Departmental prerequisite:** Soc 1 is prerequisite to all 100-level sociology courses except Soc 105.

## **SOCIOLOGY**

### **1 Introduction to Sociology (3)**

Staff

A broad overview of the “sociological imagination” as a way of understanding social events and personal experience; sociology's place among the social sciences; basic elements of sociological perspectives. (Fall and spring)

### **3 Introduction to Criminal Justice (3)**

Kubrin, Weitzer, Buntman

An introduction to the study of criminal justice. The historical development of criminal justice and its evolution into modern legal systems. The impact of different forms of criminal justice on society and the individual. (Fall)

**101 Social Research Methods (3)**

Kubrin, Tuch, Ishizawa

Lecture (3 hours), laboratory (1 hour). Introduction to basic research methods in sociology. Topics include research design, sampling, measurement, and analysis of survey data via computer application. (Fall)

**102 Techniques of Data Analysis (3)**

Tuch, Ishizawa

Continuation of Soc 101. Examination of a range of topics in the statistical analysis of sociological data, with a strong emphasis on computer applications. Prerequisite: Soc 101. (Spring)

**103 Classical Sociological Theory (3)**

Kennelly, Eglitis

Development of social thought from 1840 to 1940. Major emphasis on Comte, Marx, Durkheim, Simmel, Weber, Martineau, DuBois, Addams, and Mead. (Fall)

**104 Contemporary Sociological Theory (3)**

Kennelly, Eglitis

A systematic study of the work of selected social theories of the post–World War II era. Emphasis on Parsons, Merton, Mills, Giddens, Smith, Blumer, Goffman, Berger, Gramsci, Beauvoir, Wallerstein, Foucault, and Butler. (Spring)

**105 Social Problems in American Society (3)**

Squires, Kubrin

Introduction to critical social problems (e.g., unemployment, poverty, crime, discrimination) in the United States and how they are, and have historically been, researched and understood by the academic and non-academic worlds. Concepts,

theories, and methods of sociological research; examination of the field of social problems generally, emphasizing contemporary social problems.

**111 Field Research (3)**

Chambliss, Weitzer

Examination of the logic of qualitative inquiry and techniques of qualitative data collection and analysis. Various research methods are covered, with an emphasis on intensive interviewing, participant observation in field settings, and focus groups.

(Spring)

**112 Evaluation Research (3)**

Staff

Introduction to the evaluation of public programs designed to address the impact of social problems on individuals, households, and larger collective groups. Application of social science theory and research methods to the assessment of impact benefits and costs of such programs. (Fall)

**135 Youth and Delinquency (3)**

Chambliss, Kubrin

Analysis of historical, economic, and social conditions affecting both difficulties in socializing youth and the evolution of the state's formal systems of control. (Spring)

**136 Criminology (3)**

Chambliss, Weitzer

Nature and distribution of crime as related to the development and operation of criminal law and various social and legal institutions. Analysis of the historical, social, legal, and cultural conditions affecting the nature of crime, criminality, and the development of state responses made to it. (Spring)

**145 Criminal Law (3)**

Chambliss, Buntman

Introduction to the sources and fundamental principles of criminal law and procedure using major sociological perspectives as interpretive tools. (Spring)

150 **Sociology of Sport** (3) Zamoff

Sport as a social institution; the role, consequences, and functions of sport in U.S. society. Relationships between sport and the institutions that impact our lives: education, mass media, economics, politics, etc.

151 **Jackie Robinson: Race, Sport, and the American Dream** (3) Zamoff

How Jackie Robinson's struggles and accomplishments can help in understanding current issues in race, sport, and U.S. society. The background leading to, and the impact emanating from, Robinson's entry into major league baseball.

161 **Sociology of Complex Organizations** (3) Staff

Review of sociological approaches to the study of complex organizations. Selected and comparative emphasis on bureaucratic organization in both government and private sectors. (Spring)

162 **Sociology of the Family** (3) Staff

An examination of the stages of family life: birth, childhood, premarital relationships, marriage and sex roles in marriage, retirement and old age. Special emphasis on development and maintenance of interpersonal relations. (Fall)

163 **Sociology of Education** (3) Staff

Analysis of educational systems from historical-comparative, institutional, and micro-sociological perspectives. Emphasis on educational systems in relation to the religious, cultural, economic, and political forces shaping their character; the role of formal education in modern society. (Spring)

165 **Sociology of Religion** (3) Yeide



Analysis of the relationships between religion and society. Topics include the contribution of religion to social integration, social change, and social inequality; the nature of religious experience; religious symbolism; the basis of religious communities. (Spring)

167 **Sociology of Law** (3) Chambliss, Buntman

Law as a social phenomenon and agency of social control. Special emphasis is placed on study of the sources of and challenges to the legitimacy of law. (Fall)

168 **Economic Sociology** (3) Staff

Sociological approach to the study of micro- and macroeconomic behavior. Historical and comparative analyses informed by the literature of sociology and other social sciences. Critical review of economic policy in developing, post-communist and advanced market societies. (Spring)

169 **Urban Sociology** (3) Squires, Ishizawa

Analysis of the city from a sociological perspective. Topics include a focus on the social change and inequality associated with urban growth, neighborhood change, and suburbanization; residential segregation; the issue of whether community exists in cities; urban poverty and homelessness.

170 **Class and Inequality** (3) Tuch, Eglitis

Analysis of distribution of resources and opportunities for participation, education, and social mobility. International comparisons; analysis of public policies that affect these distributions. (Fall)

173 **Social Movements** (3) Staff

General survey of the various forms of collective behavior (fads, panics, riots, social movements, etc.), and a more detailed study of the genesis, development, and decay of social movements and social revolutions. (Spring)

175 **Sociology of Sex and Gender** (3) Kennelly, Eglitis

The roles of women and men from social structural and social psychological perspectives. Analysis of gender inequality in such areas as the family, the workforce, the media, politics, law, religion, and education.

178 **Deviance and Control** (3) Weitzer, Kubrin

Examination of deviant behavior and its control. Topics include theoretical perspectives, changing societal conceptions of deviance, deviant behavior and identity, and the dynamics of control agencies. (Fall)

179 **Race and Minority Relations** (3) Tuch, Squires

Analysis of relationships between dominant and minority groups in society; nature and range of problems; analysis of the phenomenon of prejudice. (Spring)

181 **Special Topics in Sociology** (3) Staff

Analysis and examination of various processes in society of general importance to the field of sociology, e.g., social conflict, socialization, social change. Topic changes each semester; may be repeated once for credit. (Fall and spring)

184 **Violence and the Family** (3) Staff

Comparative approach to power and violence in family systems. Analysis of devaluation of family relations. Critical survey of explanations of violence and responses made to it. (Fall)

189 **Special Topics in Criminal Justice** (3) Staff

Analysis and examination of various processes and problems of general importance to the field of criminal justice. Topic changes each semester; may be repeated once for credit. (Fall and spring)

**192 Advanced Seminar in Criminal Justice (6)**

Chambliss, Weitzer

Restricted to seniors majoring in criminal justice. Internship in a criminal justice agency; field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, presentations, journal, and a paper are required. Prerequisite: Soc 136 or 145. (Fall and spring)

**195 Research (1 to 3)**

Staff

Independent study and special projects. Open only to selected undergraduates with promising academic records. Prerequisite: Students must submit a written proposal of their plan of study for the approval of the member of the department who will direct the research. May be repeated for credit to a maximum of 6 credits.  
(Fall, spring, and summer)

**197 Advanced Seminar in Sociology (6)**

Eglitis

Restricted to seniors majoring in sociology. Students spend at least 12 hours a week in an approved community agency or organization in metropolitan Washington. Field placement in consultation with a faculty member is required before registration. Weekly seminar meetings, reports, a journal, and a written paper are required.  
(Fall and spring)

**HUMAN SERVICES**

**133 Supervised Experience in Human Services (3 to 6)**

Nashman

Development of experience-based perspective on human services through fieldwork in a community-based agency or organization. Meetings, journal, and research paper.

Admission by permission of instructor. (Fall and spring)

**152 Issues in Human Services (1 to 6)** Nashman

An inquiry into the values and methods of practitioners in the field of human services, linking academic study and field experience. Admission by permission of instructor.

(Fall and spring)

**171 Introduction to Human Development I (3)** Sardi

Lectures and fieldwork. All aspects of development through adolescence; child study techniques. Two to three hours weekly field experience in appropriate setting. (Fall)

**172 Introduction to Human Development II (3)** Staff

Adult development from young adulthood to old age. Dominant psychosocial, cognitive, and physical competencies; motivational changes; coping styles; normative and non-normative behaviors. Three hours weekly field experience in appropriate agency setting. (Spring)

**176 Program Planning and Development for Service Agencies (3)** Staff

The program planning and development activities essential to human service agencies.

Through case studies and on-site field experiences, students analyze processes by which agency needs are assessed and programs planned. Community-based research.

Prerequisite: Status as a human services major or minor or permission of the instructor.

(Fall)

**177 Human Services and Community:** Konwerski

**Empowerment for Social Change (3)**

The community as a laboratory for the study of contemporary issues in philanthropy aimed toward social change. Through readings, observations, and group internships, students participate in various aspects of community service. (Fall)

**182 Organization and Administration in the Human Services (3)** Staff

Introduction to organizational theory and program administration in community agencies: staff recruitment and development; fiscal operations including funding; facilities; and effective community relations. Community-based research. Prerequisite: Status as a human services major or minor or permission of the instructor. (Spring)

**193 Research and Independent Study (arr.)** Nashman

Individual research and special projects. Admission by permission of instructor.

**195 Seminar in Human Services: Current Issues (3)** Konwerski

Analysis of selected issues in human services. Each student conducts an investigation of an identified problem in human services and completes a skill assessment project. Admission by permission of instructor. (Spring)

**198 Topics in Human Services (1 to 3)** Staff

Topics to be announced in the Schedule of Classes. May be repeated for credit.

**SPANISH**

See **Romance, German, and Slavic Languages and Literatures.**

**SPEECH AND HEARING SCIENCE**

*Professors* C.W. Linebaugh, G.M. Schulz, J. Mahshie (*Chair*)

*Associate Professors* M.D.M. Brewer, S. Brundage

*Assistant Professors* N.S. Richards, F. Subiaul, A.B. Hancock, C. Core

*Teaching Instructor* M.E. O'Donnell

*Professorial Lecturers* M.E. Moody, D. Williamson

*Bachelor of Arts with a major in speech and hearing science*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—Ling 101; Psyc 1, 121, and either 118 or 131.
3. Required courses in the major—SpHr 11, 71, 72, 104, 105–6, 107, 108, 118, 119, 130, 131, 132.

Students who plan to go on to graduate study should note that the accrediting body (ASHA) requires undergraduate course work in biological sciences, chemistry or physics, and statistics or mathematics to enter a graduate program.

*Special Honors*—To qualify for graduation with Special Honors, the student must fulfill the general requirements stated under University Regulations, submit an application to the department before the beginning of the senior year, register for 1 credit of SpHr 196, and complete an independent study honors project with distinction. Students must confer with an advisor before beginning the work. A 3.75 grade-point average in the major and overall is required both for acceptance and for graduation with Special Honors.

*Minor in speech and hearing science*—17 credit hours, including SpHr 104 and 105–6, plus 6 credits of 100-level SpHr courses selected with approval of the departmental advisor.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

Speech and hearing therapy: See the Speech and Hearing Center.

Development of naturalness, correctness, and clarity in conversation through the study of phonetics, rate, volume, pitch, and quality in preparation for performance.

Laboratory fee. (Fall, spring, and summer)

**71 Foundations of Human Communication (3)** Moody, Richards, Subiaul

An introduction to the fundamental principles of the biology of speech, hearing and language, language structure and use, and human communicative interaction. Practice in the identification of specific verbal and nonverbal aspects of communication behavior. (Fall and spring)

**72 Multicultural Issues in Human Communication (3)** Staff

Consideration of the influences of culture and bilingualism on language development and use and on communicative interaction; experimental and ethnographic methods for studying language and communication in a multicultural society. (Fall and spring)

**81–83 American Sign Language I–III (3 each)** O'Donnell

Development of basic communication skills, with appropriate vocabulary and grammatical structures; emphasis on comprehension skills. Prerequisite: to SpHr 82, SpHr 81; to SpHr 83, SpHr 82. (Fall and spring)

**84 Perspectives in Deaf Culture (3)** O'Donnell

Introduction to the Deaf community as a linguistic and cultural minority group. The roles of deaf people in the larger society, including political activism. Generational differences concerning education, socioeconomic status, medical issues, and language. (Spring)

**104 Speech and Language Disorders (3)** Williamson

Survey of the nature and causes of developmental and acquired disorders of speech and language. Emphasis on prevention and effective communication with persons having a speech–language impairment. (Fall)

**105–6 Anatomy and Physiology for**

Brewer, Schulz, Mahshie

**Speech and Hearing I–II (4–4)**

SpHr 105: Anatomy and physiology of the respiratory, phonatory, articulatory, and resonatory subsystems of speech; swallowing; and the cranial nerves. SpHr 106: Anatomy of the ear; physiology of hearing; anatomy of the brain and spinal cord; physiology of the nervous system. Laboratory fee. (Academic year)

**107 Acoustics (3)**

Brewer

The basic acoustics needed for understanding audition, speech acoustics and perception, and instrumentation. Laboratory fee. (Fall)

**108 Introduction to Audiology (3)**

Brewer

Survey of the field of audiology, including the measurement of hearing, the nature and causes of hearing impairment, hearing aids and habilitation/rehabilitation of the hearing impaired. Prerequisite: SpHr 107; prerequisite or corequisite: SpHr 106. Laboratory fee. (Spring)

**118 Senior Seminar (3)**

Brundage

Critical evaluation of the research literature on speech and hearing; the process of scientific writing and analysis; how research can inform and improve clinical practice. For departmental majors in the senior year. Laboratory fee. (Fall)

**119 Analysis and Modification of Communication Disorders (3)**

Staff



For department majors in their senior year. Assessment of speaker–listener behavior; acoustic, behavioral, and linguistic properties of speaker intelligibility and credibility; observation, analysis, and modification of speech and language comprehension and expression. Prerequisite: senior standing. Laboratory fee. (Spring)

**130 Phonetics and Phonological Development (3)** Richards

Detailed study of English phonetics and phonology; prespeech vocalization and phonological development; multicultural issues in phonological development; intensive practice in phonetic transcription. Prerequisite or corequisite: SpHr 105. Laboratory fee. (Fall)

**131 Language Acquisition and Development (3)** Core

Theories of language acquisition; development of language from birth through adolescence; emphasis on development of semantics, syntax, morphology, and pragmatics; multicultural issues in language development. Laboratory fee. Prerequisite: SpHr 130. (Spring)

**132 Literacy (3)** Staff

An overview of literacy development (thinking, listening, speaking, reading, spelling, writing) with emphasis on reading and writing development. Laboratory fee. (Fall)

**196 Independent Study (1 to 6)** Staff

Independent research and special projects. Before students are permitted to register for SpHr 196, they must submit a written proposal of the plan of study and obtain approval of the staff member who will direct the study and of the department chair.

**199 Selected Topics (3)** Staff

Topic announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

## STATISTICS

*Professors* J.L. Gastwirth, N.D. Singpurwalla, J.M. Lachin III, H.M. Mahmoud, T.K. Nayak, Z.

Li, J. Chandra (*Research*), R. Modarres (*Chair*)

*Associate Professors* S. Bose, E. Bura, S. Kundu, M. Larsen

*Assistant Professors* S. Balaji, Y. Lai, Q. Pan, J.R. Stroud

*Professorial Lecturers* F. Ponti, P. Chandhok, R.F. Teitel, C.M. Fleming

*Lecturer* H. Modarres

*Bachelor of Science with a major in statistics*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite courses—Math 31, 32, 33; an introductory course in statistical methods.
3. Required courses in the major—Math 84; Stat 118, 119, 129, 157–58, and either 183 or 197, plus three approved 100-level courses, some of which, in special circumstances, may be taken in other departments. To assure a balanced program, departmental approval of electives is required for all majors.

Students who seek Special Honors in statistics should check with the Department.

*Minor in statistics*—18 hours of approved courses in this department, including an introductory statistics course, Stat 118 or 123, and one computer-intensive course.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Note:** Stat 51, 53, 104, 111, and 127 are related in their subject matter, and credit for only one of the five may be applied toward a degree. One entrance unit in algebra is prerequisite to all courses in statistics.

**51 Introduction to Business and Economic Statistics (3)**                      Nayak and Staff

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, probability distributions, sampling, estimation, tests of hypotheses, regression and correlation, with applications to business. (Fall and spring)

**53 Introduction to Statistics in Social Science (3)**                      Balaji and Staff

Lecture (3 hours), laboratory (1 hour). Frequency distributions, descriptive measures, probability, sampling, estimation, tests of hypotheses, regression and correlation, with applications to social sciences. (Fall and spring)

**104 Statistics in Management, Administration, and Policy Studies (3)**                      Staff

Lecture (3 hours), laboratory (1 hour). Introductory study of statistical techniques for research problems. For graduate students in fields other than statistics who have no previous statistics training. Offered off campus only.

**105 Statistics in the Behavioral Sciences (3)**                      Staff

Lecture (3 hours), laboratory (1 hour). Advanced study of statistical techniques for research problems. Analysis of variance, correlation techniques, nonparametric techniques, sampling theory. Prerequisite: an introductory statistics course and satisfactory performance on a placement examination. (Fall)

**111 Business and Economic Statistics I (3)**                      Gastwirth, Bura

Descriptive statistics, graphical methods, probability, special distributions, random variables, sampling, estimation and confidence intervals, hypothesis testing, correlation and regression. (Fall)

**112 Business and Economic Statistics II (3)** Gastwirth, Bura

Continuation of Stat 111, with emphasis on techniques of regression, chi-square, nonparametric inference, index numbers, time series, decision analysis, and other topics used in economics and business. Prerequisite: Stat 111 or equivalent.  
(Fall and spring)

**118 Regression Analysis (3)** Kundu

Lecture (3 hours), laboratory (1 hour). Simple and multiple linear regression, partial correlation, residual analysis, stepwise model building, multicollinearity and diagnostic methods, indicator variables. Prerequisite: an introductory statistics course.  
(Fall and spring)

**119 Analysis of Variance (3)** Staff

Lecture (3 hours), laboratory (1 hour). Introduction to the design of experiments and analysis of variance; randomized block, factorial, Latin square designs, and analysis of covariance. Prerequisite: Stat 118. (Spring)

**123 Introduction to Econometrics (3)** Staff

Same as Econ 123.

**127 Statistics for the Biological Sciences (3)** Lai

Introduction to statistical techniques and reasoning applicable to the biomedical and related sciences. Properties of basic probability functions: binomial, Poisson, and normal. Data analysis, inference, and experimental design. (Spring)

- 129 Introduction to Computing (3)** Mahmoud, Teitel  
Introduction to elements of computer programming and problem-solving using Pascal. Hands-on experience will be acquired through computer programming projects, including some simple statistical applications. (Fall and spring)
- 157–58 Introduction to Mathematical Statistics (3–3)** Pan, Mahmoud  
Stat 157: Basic concepts of probability theory, including random variables, independence, distribution theory, and sampling theory. Stat 158: Inference procedures, including estimation, hypothesis testing, regression analysis, and experimental design. Prerequisite: Math 32 or equivalent. (Academic year)
- 173 Discrete Systems Simulation (3)** Staff  
Same as EMSE 173.
- 181 Applied Time Series Analysis (3)** Stroud  
Autoregressive integrated moving average (ARIMA) modeling and forecasting of univariate time series. Estimation of spectral density functions, white noise tests, and tests for periodicities. Theory and applications using SAS. Prerequisite: Math 33, Stat 157–58 or 118. (Spring)
- 188 Nonparametric Statistical Inference (3)** Staff  
Statistical inference when the form of the underlying distribution is not fully specified. Nonparametric procedures for estimation and testing hypotheses. An introduction to robust procedures. Prerequisite: Stat 51 or equivalent. (Fall, even years)
- 189–90 Mathematical Probability and Applications (3–3)** Mahmoud  
Probability theory, including combinatorial analysis, conditional probability, and stochastic independence. Random variables and their distributions; laws of large

numbers and central limit theorem. Application of concepts to elementary stochastic processes (coin-tossing sequences, branching processes, Markov chains). Prerequisite: Math 32 or equivalent. (Alternate academic years)

195 **Reading and Research** (arr.) Staff

May be repeated once for credit. Admission by permission of department chair.  
(Fall and spring)

197 **Fundamentals of SAS Programming for Data Management** (3) Modarres

Fundamentals of the SAS system for data management, statistical analysis, and report writing. Data modification; programming; file handling; and macro writing.  
Prerequisite: An introductory statistics course and Stat 129. (Spring)

198 **Special Topics** (3) Staff

Topic to be announced in the Schedule of Classes. May be repeated for credit provided the content differs.

**STRATEGIC MANAGEMENT AND PUBLIC POLICY**

*Professors* H.J. Davis, W.H. Becker, D.J. Lenn, M. Starik (*Chair*), T.L. Fort

*Associate Professors* J.B. Thurman, J.W. Cook, E.J. Englander, J.H. Beales III, L. Burke, J.J.

Griffin, B.S. Teng, J. Rivera

*Assistant Professors* D.R. Kane, E.H. Kim

*Professorial Lecturer* W.N. LaForge

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration.

51 **Introduction to Business** (3) Staff

Structure, activities, and problems of business enterprise; its contribution to the individual and society; careers in business. Prerequisite: Sophomore standing. (Fall)

190 **Special Topics** (3) Staff

Experimental offering; new course topics and teaching methods.

199 **Independent Study** (arr.) Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall and spring)

## **THEATRE AND DANCE**

*Professors* M.R. Withers, A.G. Wade, L.B. Jacobson

*Associate Professors* W.A. Pucilowsky, C.F. Gudenius, D.T.S. Burgess (*Chair*), J.I. Kanter

*Assistant Professors* M.A. Buckley, V.S. Smith, C.F. Gomez

*Adjunct Professor* A.C. Stokes

*Professorial Lecturer* K.Z. Keller

*Bachelor of Arts with a major in theatre*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Required courses in related areas—9 credit hours in dramatic literature and playwriting at the 100 level.
3. Required courses in the major—TrDa 14, 124, 130, 139 (3 credits), 145–46, 147; 6 credit hours in design/technical theatre courses; 12 additional credit hours in 100-level theatre and dance courses.

*Bachelor of Arts with a major in dance*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.

2. Required courses in the major: 13 credit hours of courses in technique; 17 hours of courses in creative process/performance/theory; 3 hours of production design; 6 hours of electives. The department maintains a list of courses that fulfill these requirements.

*Bachelor of Arts with a major in dramatic literature*—The Department of Theatre and Dance and the Department of English offer an interdisciplinary major in dramatic literature. See Dramatic Literature.

*Minor in Theatre*—18 credit hours of theatre courses, including TrDa 145–46.

*Minor in Dance*—18 credit hours of dance courses, including no more than 9 hours from TrDa 49 through 59 and 160 through 175, plus 3 hours from TrDa 180, 182, 185, 186, and 191.

*Special Honors*—In addition to meeting the general requirements stated under University Regulations, candidates for graduation with Special Honors in Theatre or Dance must have a grade-point average of 3.4 in the major and complete TrDa 199 with a grade of *A*. They must consult with a faculty advisor at the beginning of the second semester of the junior year to determine eligibility, area of study, and the director of the research or creative project.

With permission, a limited number of graduate courses in the department may be taken for credit toward an undergraduate degree. See the Graduate Programs Bulletin for course listings.

**Note:** Courses below the 100 level are primarily for nonmajors.

**11 Theatre Production (3)**

Smith

Understanding of the basic elements of production (performance, technical and management) and the collaborative artist/artisan process through discussion, observation, and practical application. (Fall and spring)

**14 Introduction to Acting (3)**

Jacobson, Kanter, Wade, and Staff



- Basic techniques of concentration, imagination, improvisation, and character development. (Fall and spring)
- 45 **Understanding the Theatre** (3) Smith
- The art of the theatre; its literature, architecture, aesthetics, and mechanics. Contributions of the playwright, actor, director, and designer. Attendance at theatrical performances, presentations, and videos. (Fall and spring)
- 46 **Understanding the Dance** (3) Staff
- The art of dance—a lecture and experiential approach to its cultural importance, history, and creative processes. The contributions of the choreographer and dancer to society. Attendance at performances and presentations, and viewing video. (Fall and spring)
- 49 **Movement Awareness** (2 or 3) Staff
- An experiential dance movement class that examines human movement and its connection to dance. Somatic concepts of Alexander, Feldenkrais, Bartenieff, and Body/Mind/Centering. (Fall and spring)
- 50 **Beginning Ballet** (1) Staff
- Introduction to classical ballet technique, including basic concepts of dynamic alignment, stretch, strength, and musicality.
- 51 **Beginning/Intermediate Ballet** (1) Staff
- 52 **Beginning Modern/Postmodern Dance** (1) Buckley and Staff
- Introduction to modern dance technique inclusive of basic concepts of dynamic alignment, stretch, strength, improvisation and musicality.
- 53 **Beginning/Intermediate Modern/Postmodern Dance** (1) Buckley and Staff

- 105 **Fundamentals of Dramatic Writing** (3) Griffith  
Same as Engl 105.
- 108 **Intermediate Dramatic Writing** (3) Griffith  
Same as Engl 108.
- 115 **Introduction to Scene Study: Realism** (3) Jacobson, Kanter, Wade  
Principles of role development, concentrating on 20th-century material. Prerequisite:  
TrDa 14. (Fall and spring)
- 116 **Scene Study: Voice and Character** (3) Jacobson and Staff  
The practice and application of voice production with reference to skeletal alignment, breathing, resonance, and articulation. Emphasis on the process of voice production and its application to performance through work on scenes and monologues.  
Prerequisite: TrDa 115. (Fall and spring)
- 120 **Physical Performance Skills** (3) Staff  
Introduction to a variety of techniques needed by actors and performers, including mime, clowning, slapstick, mask work, and basic stage combat skills. Prerequisite:  
TrDa 116. Laboratory fee. (Spring, even years)
- 121 **Scene Study: Contemporary Text** (3) Staff  
Principles of role development in the works of post-war playwrights to include both the genres of comedy and drama and the stylistic directions of realism and post-realism. Playwrights chosen may include Beckett, Pinter, Albee, Stoppard, Marnet, Labute, Norman, Simon, and Henley. Prerequisite: TrDa 116. (Fall, odd years)
- 123 **Scene Study: Classical Text** (3) Staff

Principles of role development in the works of pre-modern dramatists including Shakespeare and his contemporaries, the playwrights of the English Restoration, Molière, and other 17th- and 18th-century playwrights. Prerequisite: TrDa 116.  
(Fall, even years)

124 **Play Analysis** (3) Staff

Same as Engl 124.

125 **Stage Dialects** (2) Jacobson

Vocal production related to interpretation of specific texts. Focus on stage dialects and the interpretation of Shakespeare. Prerequisite: TrDa 116. (Spring, odd years)

127 **Scene Study: Acting for the Media** (2) Wade

Techniques of acting for the camera; analysis of film and television scripts from actor's point of view. Prerequisite: TrDa 116. Laboratory required. Laboratory fee.  
(Fall, odd years)

128 **Audition Techniques** (2) Staff

All aspects of the audition process: selection and rehearsal of audition monologues, handling of cold reading, etc. Prerequisite: TrDa 116. (Fall, even years)

130 **Basics of Production Design** (3) Pucilowsky, Gudenius, Gomez, Smith

Understanding of the basic elements of production design and execution through discussion, observation, and practical application. Laboratory required. Laboratory fee.  
(Fall and spring)

131 **Introduction to Lighting** (3) Gudenius

Lecture (2 hours), laboratory (1 hour). Theories and practicum in lighting for theatre and dance. Laboratory fee. Prerequisite: TrDa 130.

132 **Makeup Design (3)** Pucilowsky

Theory and practicum in the art of makeup design, including latex and crepe hair.

Prerequisite: TrDa 130.

133 **Stage Management (3)** Staff

The role and function of the stage manager in theatrical production. The basic skills needed to begin work in stage management. Emphasis on organization, documentation, and dissemination of information. Prerequisite: TrDa 130. Laboratory fee.

135 **Introduction to Scene Design (3)** Gudenius

Fundamental study of scenic design, including historic overview, basic drawing, and rendering techniques, through the use of various mediums and script analysis.

Prerequisite: TrDa 130.

136 **Beginning Costuming (3)** Pucilowsky, Smith

History of fashion in Western civilization from ancient Greece to the 20th century.

Fundamental study of costume construction through specific projects. Costume construction. Prerequisite: TrDa 130. Laboratory fee.

138 **Scene Painting (3)** Staff

The techniques and materials used in creating character in the various elements of set design. Methods include set preparation, coating, mixing, palette preparation, spraying, transfer, texturing, finishing, and wallpapering. Prerequisite: TrDa 130. Laboratory fee.

139 **Theatre Practicum (1)** Gomez

Participation in department mainstage productions in a production or management capacity under the supervision of a member of the faculty. Prerequisite: TrDa 11 or 130. May be repeated for credit. After completing for 3 credits, students may

participate in a performance capacity for an additional 3 credits. Prerequisite: TrDa 11 or 130. (Fall and spring)

**140 Anthropology in Performance (3)** Allen

Exploration of the relationships among social interaction, ritual, and dramatic performance. Classes consist of improvisation workshops and discussion, based on readings about non-Western cultures. Same as Anth 191. (Spring)

**145–46 History of the Theatre (3–3)** Staff

A dramaturg's approach to case studies of theatre in historical context. TrDa 145: ancient Greece through the 17th century. TrDa 146: the 18th century through the present. (Academic year)

**147 Directing for the Theatre (3)** Kanter

Fundamentals of script analysis, staging, casting, and rehearsal techniques.

Prerequisite: TrDa 14, 124, 130. Laboratory fee. (Fall)

**150 Theatre Criticism (3)** Staff

Discussion and witnessing of plays in performance, resulting in written criticism modeled on contemporary journalistic practices. Prerequisite: TrDa 145 or 146 or TrDa/Engl 124. Laboratory fee. (Spring)

**156 Dance in Community Settings (3)** Burgess

Examination of dance in Washington area communities. Students are required to site visit and engage with individuals and organizations that focus on dance as it pertains to performance, therapy, management, and education. Participation in activities with a dance artist/practitioner or with a producing/service organization is required. (Spring)

160–61 **Intermediate Ballet (2–2)** Staff

May be repeated for credit. Prerequisite: TrDa 51 to 160, TrDa 160 to 161, or permission of instructor.

162–63 **Intermediate/Advanced Ballet (2–2)** Staff

May be repeated for credit. Prerequisite: TrDa 161 to 162, TrDa 162 to 163, or permission of instructor.

170–71 **Intermediate Modern/Postmodern Dance (2 or 3 each)** Burgess

Recommended for students with previous dance experience in jazz, ballet, hip hop, modern, or other styles. May be repeated for credit. Prerequisite: TrDa 170 to 171, or permission of instructor.

172–73 **Intermediate/Advanced Modern/Postmodern Dance (2 or 3 each)** Staff

May be repeated for credit. Prerequisite: TrDa 171 to 172, TrDa 172 to 173, or permission of instructor.

174–75 **Advanced Modern/Postmodern Dance (2 or 3 each)** Staff

May be repeated for credit. Prerequisite: TrDa 173 to 174, TrDa 174 to 175, or permission of instructor.

179 **Contact Improvisation (2)** Staff

A movement form that arises from the point of contact between partners who explore gravity, space, and timing in the spontaneous moment-to-moment exchange of the dance. Exploring the improvisational state of body/mind through the use of imagery, tuning the senses, mindfulness practices, and play.

180 **Movement Improvisation and Performance (3)** Withers

Exploring the body and its surroundings in movement, use of language, narrative, environments and contexts for creative expression, developing event and performance structures from improvisation. May be repeated for credit. (Spring)

182–83 **Dance Composition (3–3)**

Withers

TrDa 182: Problems in structural and conceptual aspects of constructing dances and shaping and forming movement materials. TrDa 183: Emphasis on intention and content in making dances. Prerequisite: TrDa 180; recommended: TrDa 185.  
(Academic year)

184 **Choreographic Projects (3)**

Withers, Burgess

Create a dance or a performance work of individual design, including casting, rehearsal procedures, staging aspects, and public presentation. Prerequisite: TrDa 182; recommended: TrDa 130, 185. May be repeated for credit.

185 **Trends in Performance Art (3)**

Withers

Study of the theory and practice of contemporary performance art movements and artists; political and artistic activism; scripting and scoring to create performance works based on a single art discipline or interdisciplinary arts. (Fall)

186 **Dance Anatomy and Kinesiology (3)**

Burgess

An experiential and theoretical approach to dynamic anatomy and kinesiology as they pertain to the dancer. The student is encouraged to reach full movement potential in relation to contemporary dance techniques, performance, and injury prevention. (Fall)

191 **Dance History (3)**

Buckley

The history of Western theatrical dance from the late 18th century to the present. The major choreographers and their dance works through readings, lectures, video, and discussion. (Spring)

192 **Repertory/Performance** (1 or 2)

Burgess, Withers

Participation in the processes of learning and performing dance repertory or new dance works. Audition required. Laboratory required. May be repeated for credit.

(Fall and spring)

193–94 **Dance Styles** (arr.)

Staff

Forms of theatrical dance other than ballet or modern, including African dance, Angola Capoeira, classical Indian dance, music theatre, Spanish dance, and others. May be repeated for credit provided the topic differs.

195 **Selected Topics** (1 to 3)

Staff

Topics of current interest in theatre or dance. Topics (and course fee, when charged) announced in the Schedule of Classes. May be repeated for credit provided the topic differs.

196 **Independent Study** (1 to 6)

Staff

Independent research and special projects. Open to qualified juniors or seniors majoring or minoring in theatre or dance. Before students are permitted to register for TrDa 196, they must submit a written proposal of the plan of study and obtain approval of the faculty member who is directing the study and the department chair.

198 **Internship** (3 or 6)

Staff

Open to qualified seniors majoring or minoring in theatre or dance. Work placements with not-for-profit and commercial theatre and dance organizations for an approved



number of hours per week. Admission requires departmental approval. May be taken for a maximum of 6 credits. (Fall and spring)

**199 Honors Thesis (3)**

Staff

Directed research and/or creative project. Open to qualified seniors by permission.

Arrangements must be made with a sponsoring faculty member in the department and applications must be completed early in the second semester of the junior year.

(Fall and spring)

**TOURISM AND HOSPITALITY MANAGEMENT**

*Professors* D.E. Hawkins, D. Frechtling, L. Yu (*Chair*)

*Associate Professors* L.A. Delpy Neirotti, S. Elliott

*Assistant Professors* R. Brouard, S. Boo, S. Levy, H. Bowen

*Professorial Lecturers* W.C. Corkern, E. Zavian

*Lecturers* L.K. Long, I. Christie

See the School of Business for programs of study leading to the degree of Bachelor of Business Administration and the combined degree program leading to the Bachelor of Business Administration and Master of Tourism Administration.

**104 Introduction to Tourism and Hospitality Management (3)**

Levy

Historical overview and survey of the tourism and hospitality industry, with emphasis on the travel market, delivery of hospitality services, professional roles, and emerging trends. (Fall, spring, and summer)

**113–14 Practicum (3–3)**

Staff

Fieldwork, internship, and/or instructional practice, including conference and/or seminar. Admission by permission of instructor. May be repeated once for credit with permission of advisor. (Fall, spring, and summer)

**135 Sport and Event Business Enterprises (3)** Delpy Neirotti

An overview of business opportunities related to sport and events. Emphasis on sport and event facilities and event management; product manufacturing, merchandising, and licensing; media and publications; and athlete representation. (Fall)

**136 Sport and Event Marketing (3)** Delpy Neirotti

Application of marketing theories and practices to sport and events. Sponsorship, endorsement proposals, public relations, and promotional campaigns. Prerequisite: BAdm 110. (Spring)

**137 Issues in Sport and Event Management (3)** Delpy Neirotti

A discussion of policies, procedures, organizational structures, issues, and trends in sport and events, from amateur to professional. (Spring)

**143 Hospitality Industry Management (3)** Levy

An overview of the basic principles and practices involved in the management, operation, marketing, and financing of hotels, restaurants, and other hospitality goods and services. (Fall)

**144 Financial Management in the Tourism and Hospitality Industry (3)** Yu

Basic principles of planning and managing tourism resources, developments, and facilities in relation to investment constraints and opportunities. Financial monitoring and control of hospitality facilities and related leisure services. Prerequisite: BAdm 115. (Spring)

**145 Travel Marketing Communications (3)** Elliott

Review of basic advertising, public relations, and sales techniques, applied to the tourism and hospitality industry. Current practices and case studies. (Spring)

**147 Passenger Transportation Systems (3)** Staff

Survey of passenger transportation modes. Emphasis on airline operations, marketing communications, and distribution channels. (Fall)

**172 International Experiences (1 to 6)** Delpy Neirotti

Travel to a foreign country for study of a specific topic. May be repeated for credit with permission of the advisor. (Fall, spring, and summer)

**190 Special Topics (1 to 3)** Staff

Experimental offering; new course topics and teaching methods. May be repeated once for credit. (Fall, spring, and summer)

**199 Independent Study (1 to 3)** Staff

Assigned topics. Admission by prior permission of advisor. May be repeated once for credit. (Fall, spring, and summer)

**UNIVERSITY PROFESSORS**

*University Professors* A. Etzioni, P.J. Caws, S.H. Nasr, J.N. Rosenau, S.A. Saltzburg, B. Wood,

S.J. Trachtenberg, V.N. Gamble

Courses numbered in the 770s and 780s are taught by distinguished scholars who hold appointments as University Professors. With the approval of the department or program concerned, appropriate University Professor courses may be taken to satisfy degree program requirements. Permission of the University Professor may be required for enrollment. A complete listing of courses offered each semester appears in the Schedule of Classes under the

700 series. Following is a list of courses that are expected to be taught fairly regularly by University Professors.

Anth

**770 Our Place in Nature (3)**

Wood

How our understanding of human evolution and of the relationship between modern humans and the natural world has evolved. The fossil record for human evolution, the social and intellectual context of the discoveries, and biographies of those who made major contributions to the recovery and interpretation of the fossil evidence. For undergraduates; open to graduate students.

Hist

**771 Epidemics in American History (3)**

Gamble

Epidemics in the United States from the colonial period to the present, including the development of the medical and public health responses to epidemics and their social, political, and economic impacts on American history and culture. For undergraduates; open to graduate students.

Hist

**772 American Medicine and Public Health:**

Gamble

**African American Experiences (3)**

The experiences of African Americans as patients and as health care providers are used to examine the history of relationships among race, medicine, and public health. The historical roots of contemporary policy dilemmas such as racial and ethnic disparities in health and health care. For undergraduates; open to graduate students.

Hist

**773 History of 20th-Century American Medicine (3)**

Gamble

Changes in medicine that have shaped contemporary health care in the United States.

Topics include advances in medical research and technology; development of the health professions; changes in medical education; debate over national health insurance; the growth of hospitals; and the role of the state in the provision of health care. For undergraduates; open to graduate students.

Phil

**772 Individualism (3)**

Caws

The concept of the free individual in philosophy, psychology, literature, and politics: individuals and groups; individualism and collectivism; exemplary individuals in biography, autobiography, and fiction; problems of individual and collective agency and identity. For undergraduates; open to graduate students.

Phil

**774 Understanding Technology (3)**

Caws

The idea of technology—its relation to the sciences and the arts and humanities, its development, and its problems. Technology will not be regarded as merely dependent on the sciences or as merely useful (or dangerous) but as a human activity in its own right, with its own history, conceptual structure, interests, risks, and benefits. For undergraduates; open to graduate students.

Phil

**778 Left and Right in Philosophy and Politics (3)**

Caws

A fundamental inquiry into the concept of the state in terms of entrenched oppositions: individualism/collectivism, equality/liberty, liberalism/conservatism, socialism/free

enterprise, communism/capitalism. Emphasis on the present need to find a constructive transcendence of these oppositions. For graduate students; open to undergraduates.

Phil

**779 Philosophy and Psychoanalysis (3)**

Caws

An exploration of some striking parallels between the topics addressed by Freud's psychoanalytic theories on the one hand and the traditional content of philosophical reflection on the other, with special emphasis on the relation between cognitive theory and therapeutic practice (in both disciplines). For graduate students; open to undergraduates.

Rel

**770 Islamic Civilization and the West (3)**

Nasr

The encounter of Islam and the West, from the rise of Islam to modern times. Investigation of the impact of Islam on European philosophy, science, art, and literature; influence of the West and Western scholarship on the Islamic world. For juniors and seniors; open to graduate students.

Rel

**771 Persian Sufi Literature in East and West (3)**

Nasr

The writings of major Persian Sufi poets and writers, such as Khayyam, Attar, Rumi, Shabistari, and Hafiz, and their impact on the West and on India. The translation of these works into European languages and their influence upon such figures as Goethe and Emerson are discussed. Assigned readings in English. For undergraduates; open to graduate students.

Rel

**772 Mysticism—East and West (3)**

Nasr

A thematic examination of mystical traditions: the nature of mysticism, the search for ultimate reality, the mystical significance of the cosmos, the mystical science of the soul, and the significance of sacred art and symbols. Major mystical traditions of East and West—Hinduism, Taoism, Buddhism, Judaism, Christianity, Islam. For undergraduates; open to graduate students.

Rel

**773 Perennial Philosophy (3)**

Nasr

The idea of perennial philosophy as developed in the 20th century by A. Huxley, A.C. Coomaraswamy, and others. Doctrines and teachings of perennial philosophy as found in various religious and philosophical traditions of East and West. Prerequisite: at least one course in religion, philosophy, or intellectual history. For undergraduates; open to graduate students.

Rel

**775 Man and the Natural Environment (3)**

Nasr

The religious, philosophical, and scientific causes of the present environmental crisis. The history of religious and philosophical attitudes toward nature in the West, in the history of Western science, and in some non-Western world views that may encourage a more harmonious relationship between man and the natural environment. For undergraduates; open to graduate students.

Rel

**777 Religion and Science (3)**

Nasr

The interaction between religion and science in ancient Egypt, classical Greece, Islam, India, China, and the West, from the Renaissance, the scientific revolution, and up to the present day. Key concepts and issues in the encounter of religion and science in light of the cultural matrix of the civilization and period in question. For juniors and seniors; open to graduate students.

PPol/PAd/Educ

**771 The University Presidency (3)**

Trachtenberg

The changing nature of the presidency of American colleges and universities. Limits of the president's power and responsibility; governance roles in state-supported and independent institutions; the board of trustees; the university general counsel; accrediting bodies; the media. For graduate students; open to undergraduates with permission.

Soc

**785 The U.S. System of Criminal Justice (3)**

Saltzburg

The powers of law enforcement and how they relate to rights conferred upon suspects and defendants by the Constitution. A rule-oriented view of police authority to stop, search, and arrest; the privilege against self-incrimination; responsibilities of prosecutors and defense counsel; roles of judge and jury; and the right of the public and press to be present during judicial proceedings. For undergraduates.

**UNIVERSITY WRITING**

*Associate Professors R. Riedner, P. Ryder*



*Assistant Professors* E. Drown, S. Friedman, C. Gamber, G. Guerra, C. Hayes, R. Kristensen, A.

Levine, D. Malone-France, M. Mullen, S. Salchak, H. Schell (*Director*), C. Smith, M.

Svoboda, P. Troutman, D. Truncellito, A. Wilkerson, Z. Wolfe, C. Zink

*Teaching Instructors* E. Bliss, K.A. Larsen, R.A. Marcus, D.P. Myers, P.S. Presser, M. Riley,

L.B. Sallinger

The University Writing Program provides comprehensive writing instruction. All undergraduates take UW 20, followed by two Writing in the Disciplines (WID) courses. These are regular, content-area courses that include a writing component and are offered by departments and programs throughout the University. Ideally, students will complete WID courses during their sophomore and junior years. Courses indicated with “W” in the Schedule of Classes fulfill the WID portion of University Writing Program requirements. WID courses must total a minimum of 6 credits.

## **20 University Writing (4)**

University-level, independent research and writing. Learning to frame research questions, identify and analyze supportive and contradictory evidence, employ a variety of research methods, and use the ideas of other writers appropriately.

Developing strategies to draft and revise clear, engaging prose for a variety of purposes and audiences. Thematically oriented seminars; texts and course topics vary among instructors. For topics see [www.gwu.edu/~uwp/fyw/uw20-courses.html](http://www.gwu.edu/~uwp/fyw/uw20-courses.html).

(Fall and spring)

## **VIETNAMESE**

See **East Asian Languages and Literatures**.

## **WOMEN’S LEADERSHIP PROGRAMS**

*Director* R.S. Heller

The courses listed below are restricted to students who participate in the Elizabeth J. Somers Women's Leadership Programs on the Mount Vernon Campus.

**20 WLP Humanities Seminar (3)**

A writing-intensive seminar that emphasizes critical reading skills, concepts of disciplinarity, and processes of producing and legitimating knowledge. Texts and emphasis vary according to cohort.

**101–2 Women and Leadership (3–3)**

Women's status and leadership roles examined from various perspectives and various fields of endeavor, such as science and technology, the arts, international leadership, and U.S. politics and policy. Prerequisite to WLP 102: WLP 101 or permission of the instructor. Concurrent registration in WLP 110–11 is required.

**110–11 Women and Leadership I Symposium (1–1)**

A series of special programs that complements WLP 101–2. Concurrent registration in WLP 101–2 is required.

**120–21 Women and Leadership II Symposium (0 or 1 each)**

A series of special programs and experiential learning. Concurrent registration in WLP 151 is required for WLP 120.

**151 Theory and Practice of Women's Leadership (3)**

Contemporary theories of leadership; factors affecting women as leaders; building leadership skills through experiential learning. Prerequisite: WLP 102 or permission of instructor. Same as Psyc 151.

**WOMEN'S STUDIES**

*Professors* H. Hartmann (*Research*), B. Gault (*Research*)

*Associate Professors* C.E. Harrison, C. Deitch, D. Moshenberg (*Director*), A. Zucker

*Assistant Professor* K. Pemberton

*Adjunct Professors* B. Morris, A. Lynch

*Professorial Lecturer* M. Frost

### **Committee on Women's Studies**

N. Cahn, E. Chacko, L. Chang, K. Daiya, C. Deitch, C. Gamber, B. Gault, C.E. Harrison, H. Hartmann, L. Jacobson, I. Kennelly, P. Kelly, D. Lipscomb, D. Moshenberg, P.M. Palmer, K. Pemberton, G. Weiss, S. Wolchik, A. Zucker

*Bachelor of Arts with a major in women's studies*—The following requirements must be fulfilled:

1. The general requirements stated under Columbian College of Arts and Sciences.
2. Prerequisite course—WStu 1.
3. Required—30 credit hours consisting of WStu 120, 125, 199, plus seven courses from the four groups that follow, with a minimum of one course chosen from each group. A given course can fulfill only one group requirement. With approval of the program advisor, courses with appropriate subject matter may be substituted for those specified.

Women's studies—WStu 170, 183, 195.

Diversity/cross-cultural studies—AmSt/Hist/WStu 185; Anth/WStu 121; Chin/WStu 136; Engl 74; Phil 125; Span 140.

Humanities—AmSt/Hist/WStu 130, 139–40, 185; Chin/WStu 136; Clas 170; Engl 74, 162, 175; Hist 125; Phil 125; Rel/WStu 118, 181; Span 140.

Social science—Anth/WStu 121; Anth 150, 154, 157; Psyc 150; Psyc/WStu 152; Soc 166, 175.

*Combined Bachelor of Arts with a major in women's studies and Master of Arts in the field of women's studies or in the field of public policy with a concentration in women's studies—*Students interested in either of these combined degree programs should consult the Women's Studies Program office for requirements by the beginning of their junior year.

*Special Honors—*For Special Honors in women's studies, a major must meet the general requirements stated under University Regulations, attain a grade-point average of at least 3.7 in courses counted for the women's studies major and 3.3 overall, receive a grade of *A* in WStu 199, and submit an honors paper to the Women's Studies Program. Upon faculty review of the honors paper, the student may be recommended for graduation with Special Honors.

*Minor in women's studies—*18 credit hours, including WStu 120 and 125, plus four elective courses, of which at least three are at the 100 level, as approved by the advisor. Elective courses that are typically approved are listed under the women's studies major, above. Pertinent courses are frequently taught as departmental topics courses and in the 700 Series.

**1 Women in Western Civilization (3)**

Morris and Staff

Exploration of critical periods of intellectual and cultural change in Western societies as influenced by and affecting women. Examination of images of women and of changing ideal types of femininity and masculinity. Aspects of law, religion, art, culture, work, and politics in relation to these topics. Same as Hist 42. (Fall)

**120 Introduction to Women's Studies (3)**

Gamber and Staff

A multidisciplinary examination of historical conditions, cultural norms, and social institutions that define women's status in Western culture. Experiences of girls and

women in various racial–ethnic, class, and age groups. Alternative visions for women’s (and, by implication, men’s) roles and status. Sophomore standing required.

(Fall and spring)

**121 The Anthropology of Gender: Cross-Cultural Perspectives (3)** Kelly

Anthropological representations of gender relations in “other” cultures have provided important case material for feminist theorizing of sex differences and gender roles and statuses. How a cross-cultural approach can inform our understanding of gender. Same as Anth 121. (Spring)

**125 Varieties of Feminist Theory (3)** Deitch

Classical and contemporary texts on feminist explanations of women’s status.

Relationships within the sex/gender system and arrangements based on class and race.

Evaluation, through the lens of feminist theory, of several academic disciplines in the sciences, social sciences, and humanities. Prerequisite: WStu 1 or 120 or permission of instructor. (Spring)

**130 Sexuality in U.S. History (3)** Staff

Same as AmSt/Hist 130.

**135 A Study of Women and Media (3)** Gamber and Staff

The role media plays in women’s lives. The limits and effects of a “dominant” media; representations of women in print media and television, especially advertising, and in books and film. How women have attempted to articulate a culture that serves their personal, political, and social interests. (Summer)

**136 Chinese Women in Myth, Literature, and Film (3)** Frost

Same as Chin 136.

139–40 **Women in the United States (3–3)** Murphy, Harrison

Same as Hist/AmSt 139–40.

150 **Women in Judaism (3)** Staff

Same as Rel 118.

152 **Women and Psychology (3)** Zucker

Same as Psyc 152.

162 **Women in Islam (3)** Pemberton

Same as Rel 162.

166 **Women in Africa (3)** Staff

Same as Hist 106.

170 **Selected Topics (3)** Staff

Examination and analysis of central issues in women's studies, such as women and difference, women in media, women and violence, athletics and gender. Topic changes each semester; may be repeated for credit. (Fall and spring)

181 **Women in Western Religion (3)** Pemberton

Same as Rel 181.

183 **Practicum in Women's Studies (3)** Deitch

Study of the changing status of women through supervised assignment to public and private agencies engaged in policymaking, education, political action, and research.

Usually for seniors. Placement arrangements must be made the semester prior to registration; departmental permission is required. (Spring)

185 **Black Women in U.S. History (3)** Chapman

Same as AmSt/Hist 185.

**195 Undergraduate Research (1 to 3)**

Staff

A written proposal approved by the member of the faculty who will supervise the research is required prior to registration.

**199 Senior Seminar (3)**

Staff

For students completing a major or minor in women's studies. Writings of contemporary scholars and writers whose work provides critical frameworks for feminist scholarship and research. Individual or collaborative research projects are presented and submitted as written papers. (Fall)

**YIDDISH**

**See Classical and Near Eastern Languages and Civilizations.**

*f*

Faculty

**FACULTY AND STAFF OF INSTRUCTION 2009–2010**

(as of Fall 2009)

**Columbian College of Arts and Sciences**

**School of Business**

**Graduate School of Education and Human Development**

**School of Engineering and Applied Science**

**Elliott School of International Affairs**

**EMERITI**

Fred Paul Abramson, *Professor Emeritus of Pharmacology*

B.A. 1962, Case Western Reserve University; Ph.D. 1965, Ohio State University

Lewis Francis Affronti, *Professor Emeritus of Microbiology and Immunology*

B.A. 1950, M.A. 1951, State University of New York at Buffalo; Ph.D. 1958, Duke University

Frederick Amling, *Professor Emeritus of Business Finance*

B.A. 1948, Baldwin-Wallace College; M.B.A. 1949, Miami University; Ph.D. 1957,

University of Pennsylvania

Galip Mehmet Arkilic, *Professor Emeritus of Engineering and Applied Science*

B.S. in M.E. 1946, Cornell University; M.S. 1947, Illinois Institute of Technology; Ph.D.

1954, Northwestern University

Joseph Aschheim, *Professor Emeritus of Economics*

B.A. 1951, University of California, Berkeley; M.A. 1953, Ph.D. 1954, Harvard University

Ines Azar, *Professor Emeritus of Spanish*

M.A. 1969, Ph.D. 1974, Johns Hopkins University



Robert Edward Baker, *Professor Emeritus of Education*

B.S. in Ed. 1939, State University of New York at Buffalo; M.A. 1954, Catholic University of America; M.A. in Ed. 1956, Ed.D. 1962, George Washington University

Shirley Russell Barnett, *Associate Professor Emeritus of Spanish*

B.A. 1944, Vassar College; M.A. 1946, Vanderbilt University; Ph.D. 1958, University of Minnesota

Otto Bergmann, *Professor Emeritus of Physics*

Ph.D. 1949, University of Vienna

Nancy Joan Belknap, *Professor Emeritus of Special Education*

B.S. 1966, University of Michigan; M.A. in Ed. 1970, George Washington University; Ed.D. 1978, American University

Diane Bell, *Professor Emeritus of Anthropology*

B.A. 1975, Monash University, Australia; Ph.D. 1980, Australian National University

Giorgio Vittorio Borgiotti, *Professor Emeritus of Engineering and Applied Science*

Eng.Dr. 1957, University of Rome

John Gordon Boswell, *Professor Emeritus of Education*

B.A. in Ed. 1953, M.A. in Ed. 1956, Ed.D. 1963, George Washington University

Lloyd Spencer Bowling, *Professor Emeritus of Speech and Hearing*

B.A. 1954, M.A. 1957, Ed.D. 1964, University of Maryland

George Robert Bozzini, *Associate Professor Emeritus of English*

B.S. 1961, Ph.D. 1971, Georgetown University

Frederick James Brown, Jr., *Professor Emeritus of Education*

B.A. 1947, M.Ed. 1951, Western Maryland College; Ed.D. 1962, Columbia University

Robert Guy Brown, *Professor Emeritus of Sociology*

B.A. 1949, University of Rhode Island; M.A. 1951, Ph.D. 1960, University of North Carolina

James Franklin Burks, *Professor Emeritus of French*

B.A. 1951, M.A. 1952, University of Cincinnati; Ph.D. 1957, Indiana University

Elizabeth Burtner, *Professor Emeritus of Physical Education*

B.A. 1927, Hood College; M.A. 1935, Columbia University

Ali Bulent Cambel, *Professor Emeritus of Engineering and Applied Science*

B.S. 1942, Robert College, Turkey; M.S. 1946, California Institute of Technology; Ph.D.  
1950, University of Iowa

Edward Alan Caress, *Professor Emeritus of Chemistry*

B.A. 1958, Dartmouth College; Ph.D. 1963, University of Rochester

Bayard Lacey Catron, *Professor Emeritus of Public Administration*

B.A. 1963, Grinnell College; M.A. 1965, University of Chicago; M.C.P. 1972, Ph.D. 1975,  
University of California, Berkeley

Stephen Reed Chitwood, *Professor Emeritus of Public Administration*

B.A. 1962, University of Colorado; M.P.A. 1965, Ph.D. 1966, University of Southern  
California; J.D. 1977, George Washington University

Maxine D. Clair, *Professor Emeritus of English*

B.S. 1963, University of Kansas; M.F.A. 1984, American University

Mary Ann Bieter Coffland, *Associate Professor Emeritus of Romance Languages*

B.A. 1952, College of St. Catherine; M.A. 1957, Ph.D. 1965, University of Minnesota

Victor Hugo Cohn, *Professor Emeritus of Pharmacology*

B.S. 1952, Lehigh University; M.A. 1954, Harvard University; Ph.D. 1961, George Washington University

Mary Ellen Coleman, *Professor Emeritus of Education*

B.S. 1937, Madison College; M.A. in Ed. 1950, George Washington University

Gary J. Confessore, *Professor Emeritus of Higher Education Administration*

B.S. 1963, Norwich University; M.S. 1968, Troy State University; M.A. 1972, Ed.D. 1974, Columbia University

Constance Christian Costigan, *Professor Emeritus of Design*

B.S. 1957, Simmons College; M.A. 1965, American University

Thomas Francis Courtless, Jr., *Professor Emeritus of Sociology*

B.A. 1955, Pennsylvania State University; M.A. 1960, Ph.D. 1966, University of Maryland

John Patrick Coyne, *Professor Emeritus of Information Systems and Technology Management*

B.S. 1967, Iona College; M.S. 1968, Ph.D. 1970, Lehigh University

Ildiko P. DeAngelis, *Associate Professor Emeritus of Museum Studies*

M.A. 1974, State University of New York at Binghamton; J.D. 1980, American University

Linda Grant DePauw, *Professor Emeritus of American History*

B.A. 1961, Swarthmore College; Ph.D. 1964, Johns Hopkins University

Donald Wilson Dew, *Professor Emeritus of Counseling*

B.S. 1964, University of Baltimore; M.S. 1970, Medical College of Virginia of Virginia

Commonwealth University; Ed.D. 1976, American University

James Fearing Dinwiddie, *Professor Emeritus of Engineering Management*

B.S. 1948, Carnegie Institute of Technology; M.S. 1956, North Carolina State University;

M.S. 1966, Ph.D. 1972, Stanford University

Salvatore Frank Divita, *Professor Emeritus of Marketing*

B.I.E. 1953, New York University; M.B.A. 1956, Ohio State University; D.B.A. 1968, Harvard University

John K. Donaldson, Jr., *Associate Professor Emeritus of English as a Foreign Language*

B.A. 1956, University of Rochester; M.A. 1957, Middlebury College; M.S. 1980, Georgetown University; Ph.D. 1995, George Washington University

Miriam Violet Wein Dow, *Assistant Professor Emeritus of English*

B.A. 1959, University of Akron; M.A. 1960, University of Michigan; Ph.D. 1977, University of Maryland

Robert Martin Dunn, Jr., *Professor Emeritus of Economics*

B.A. 1960, Williams College; M.A. 1963, Ph.D. 1967, Stanford University

Maurice Alden East, *Professor Emeritus of International Affairs and Political Science*

B.A. 1963, Colgate University; M.A. 1966, Ph.D. 1969, Princeton University

Marvin F. Eisenberg, *Professor Emeritus of Engineering and Applied Science*

B.S. in E.E. 1953, University of Miami; M.S. in Engr. 1954, Ph.D. 1961, University of Florida; P.E.

Julian Eisenstein, *Professor Emeritus of Physics*

B.S. 1941, M.A. 1942, Ph.D. 1948, Harvard University

Rodney Walter Eldridge, *Professor Emeritus of International Finance*

B.A. 1949, M.A. 1959, University of Vermont; Ph.D. 1966, Columbia University

Lloyd Hartman Elliott, *Professor Emeritus of Higher Education; President Emeritus of the University*

B.A. 1937, Glenville State College; M.A. 1939, LL.D. 1967, West Virginia University; Ed.D. 1948, University of Colorado; LL.D. 1963, University of New Hampshire; LL.D. 1965, Colby College; LL.D. 1966, Concord College; LL.D. 1969, University of Maine at Orono; LL.D. 1970, Husson College; LL.D. 1971, Georgetown University; Litt.D. 1986, West Virginia Institute of Technology; D.H.C. 1986, Kansai University, Japan; LL.D. 1988, American University

Donald Michael Esterling, *Professor Emeritus of Engineering*

B.S. 1964, University of Notre Dame; M.A. 1966, Ph.D. 1968, Brandeis University

James Edward Falk, *Professor Emeritus of Operations Research*

B.E.E. 1960, University of Detroit; M.S. 1961, Ph.D. 1965, University of Michigan

James Elmer Feir, *Professor Emeritus of Civil Engineering*

B.S. 1950, University of Alberta, Canada; M.S. 1955, University of London; Ph.D. 1966, Cambridge University

Michael Bliss Feldman, *Professor Emeritus of Engineering and Applied Science*

B.S.E. 1966, Princeton University; M.S.E. 1970, Ph.D. 1973, University of Pennsylvania

Reynolds Ferrante, *Professor Emeritus of Education*

B.S. 1957, Glassboro State College; M.Ed. 1961, Rutgers University; Ed.D. 1974, Pennsylvania State University

Maddalena F. Ferretti, *Assistant Professor Emeritus of Italian*

Ph.D. 1954, University of Rome; Ph.D. 1982, American University

Anthony Vincent Fiacco, *Professor Emeritus of Operations Research and Applied Science*

B.A. 1950, Union College, New York; Ph.D. 1967, Northwestern University

Nicolae Filipescu, *Professor Emeritus of Chemistry*

Ph.D. 1957, University of Industrial Chemistry, Polytechnical Institute, Romania; Ph.D. 1964,  
M.D. 1975, George Washington University

Roderick Stuart French, *Professor Emeritus of Philosophy; Vice President Emeritus for  
Academic Affairs*

B.A. 1954, Kenyon College; M.Div. 1957, Episcopal Divinity School; S.T.M. 1965, Union  
Theological Seminary; Ph.D. 1971, George Washington University

Arthur Daniel Friedman, *Professor Emeritus of Engineering and Applied Science*

B.A. 1961, B.S. in E.E. 1962, M.S. in E.E. 1963, Ph.D. 1965, Columbia University

Michael Graham Gallagher, *Professor Emeritus of Accountancy*

B.A. in Govt. 1960, J.D. 1964, LL.M. 1971, George Washington University; C.P.A. 1965,  
State of Virginia

Linda Lou Gallo, *Professor Emeritus of Biochemistry and Molecular Biology*

B.S. 1959, West Virginia University; M.S. 1963, Ph.D. 1969, George Washington University

Harry Irving Gates, *Professor Emeritus of Sculpture*

B.F.A. 1958, M.F.A. 1960, University of Illinois

Lyndale Harpster George, *Associate Professor Emeritus of Human Kinetics and Leisure Studies*

B.S. in P.E. 1948, M.A. in Ed. 1952, A.P.C. 1961, George Washington University

Charles Matthew Gilmore, *Professor Emeritus of Engineering and Applied Science*

B.S. 1963, M.S. 1964, Pennsylvania State University; Ph.D. 1971, University of Maryland;  
P.E.

Irving Isadore Glick, *Professor Emeritus of Mathematics*

B.A. 1953, Johns Hopkins University; Ph.D. 1961, University of Maryland

Marvin Gordon, *Professor Emeritus of Geography and Regional Science*

B.A. 1942, City University of New York, City College; M.A. 1954, Ph.D. 1966, Columbia University

Robert Goulard, *Professor Emeritus of Engineering and Applied Science*

Ph.D. 1957, Purdue University

Joseph Arthur Greenberg, *Professor Emeritus of Education*

B.S. in Bus.Ed. 1966, Salem State College; Ed.M. 1968, Ed.D. 1974, Boston University

Donald Gross, *Professor Emeritus of Operations Research*

B.S. 1956, Carnegie Mellon University; M.S. 1959, Ph.D. 1962, Cornell University; P.E.

William Emitt Halal, *Professor Emeritus of Information Systems and Technology Management*

B.S. 1956, Purdue University; M.B.A. 1970, Ph.D. 1971, University of California, Berkeley

Janet J. Hampton, *Associate Professor Emeritus of Spanish*

B.A. 1958, University of Kansas; M.A. 1961, Mexico City College; Ph.D. 1985, Catholic University of America

John Richard Harrald, *Professor Emeritus of Engineering Management*

B.S. 1964, U.S. Coast Guard Academy; M.A.L.S. 1969, Wesleyan University; M.S. 1978, Massachusetts Institute of Technology; M.B.A. 1972, Ph.D. 1982, Rensselaer Polytechnic Institute

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*School of Medicine and Health Sciences:* Bachelor of Science in Health Sciences (B.S.H.S.), Bachelor of Science in Nursing (B.S.N.), Master of Science in Health Sciences (M.S.H.S.), Master of Science in Nursing (M.S.N.), Doctor of Nursing Practice (D.N.P.), Doctor of Physical Therapy (D.P.T.), and Doctor of Medicine (M.D.)

*Law School:* Juris Doctor (J.D.), Master of Laws (LL.M.), and Doctor of Juridical Science (S.J.D.)

*School of Engineering and Applied Science:* Bachelor of Science (B.S.), Bachelor of Arts (B.A.), Master of Science (M.S.), Engineer (Engr.), Applied Scientist (App.Sc.), and Doctor of Philosophy (Ph.D.)

*Graduate School of Education and Human Development:* Master of Arts in Education and Human Development (M.A.Ed.&H.D.), Master of Arts in Teaching (M.A.T.), Master of Education (M.Ed.), Education Specialist (Ed.S.), and Doctor of Education (Ed.D.)

*School of Business:* Bachelor of Accountancy (B.Accy.), Bachelor of Business Administration (B.B.A.), Master of Accountancy (M.Accy.), Master of Business Administration (M.B.A.), Master of Science in Finance (M.S.F.), Master of Science in Information Systems Technology (M.S.I.S.T.), Master of Science in Project Management (M.S.P.M.), Master of Tourism Administration (M.T.A.), and Doctor of Philosophy (Ph.D.)

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